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Report Highlights:

The People's Republic of China (PRC) is the second largest seed market in the world, behind the United States and annually plants 12 million metric tons (MMT) of seed, with a market value of U.S. \$19 billion. The United States continues to be the largest international seed supplier to the PRC accounting for 28 percent by value of China's MY2020/21 planting seeds imports. This report provides updated information on the regulatory landscape for planting seeds, including developments related to agricultural biotechnology in 2022 and the first half of 2023. In addition, the report includes information on the supply, trade, and utilization for a range of planting seeds, including row crops, vegetables, and grass.

I. GENERAL SITUATION

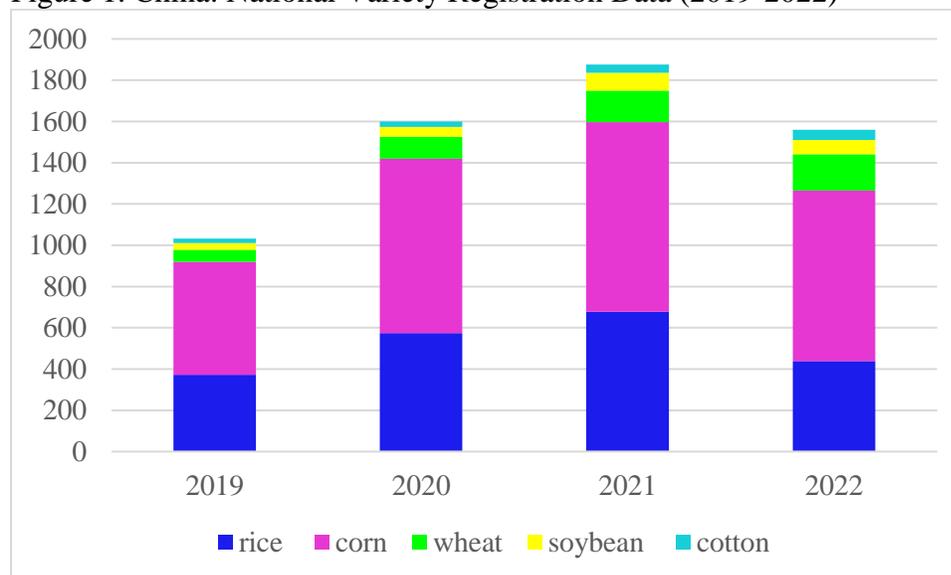
The PRC is the second largest seed market in the world, behind the United States and annually plants 12 million metric tons (MMT) of seed, with a market value of U.S. \$19 billion. The seed usage of seven key crops (corn, rice, wheat, soybean, cotton, potato, and rapeseed) is approximately 10 MMT, with a market value of U.S. \$13.5 billion. Commercial seed accounts for an average of 70 percent of China's seed for major crops above with the remainder farm-saved seed from the previous harvest. The market share of commercial seed varies by commodity with a high of 88 percent for cotton to a low of 40 percent for seed potatoes. According to official PRC reports, the country is self-sufficient in rice and wheat seed and nearly self-sufficient in corn and soybean seed. While domestic vegetable varieties continue to improve, they still do not meet the diversified needs of the market and China imports 15 percent of all vegetable seed.

According to the 2022 Crop Seed Industry Development Report in China (hereafter referred as 2022 Seed Report) by the Ministry of Agriculture and Rural Affairs (MARA), different trends in seed usage have emerged. Seed corn usage slowed down, from 28.65 kilograms per hectare (kg/ha) in 2017 to 26.5 kg/ha in 2021, mainly due to the increased popularity of precision planting technology; while hybrid rice seed increased from the 16.8 kg/ha in 2017 to 18.2 kg/ha in 2021, mainly due to increased use of mechanized rice planting area. Wheat seed increased from 187.4 kg/ha in 2017 to 214 kg/ha in 2021, mainly due to increased seeding density.

In recent years, MARA has adopted measures to improve variety registration management and strengthen intellectual property protection as a push to diversify the varieties registered as many current registrations are for similar varieties of the same crop. In 2022, the number of nationally registered varieties decreased after years of an upward trend (see figure 1 below). MARA reported that only 26 percent of rice varieties submitted for registration were approved while approval of corn varieties were only 23 percent, a drop of 15 and 38 percentage points respectively from the previous year.

According to the MARA's 2022 Seed Report, by the end of 2021, there were 7,668 seed companies holding valid business licenses. Among them, the number of companies with corn seed business was 1,920; rice seed 1,182; wheat seed 1,356; soybean seed 506; cotton seed 202; rapeseed 519; seed potato 430; peanut seed 312; melon seed 2,638. (Note: The total number exceeds 7,668 because some companies produce multiple seeds at the same time, such as both corn seeds and soybean seeds).

Figure 1. China: National Variety Registration Data (2019-2022)



Source: MARA

II. POLICY

Seed Regulations Amended to Facilitate Commercial Cultivation of Genetically Engineered (GE) Crops

On January 21, 2022, MARA published [Decree No. 2 of 2022](#), which amended Administrative Measures for Major Crops Variety Registration. The amended Measures add application procedures and requirements for GE variety registration. They also amend the Administrative Measures for Crop Seed Production and Operation License with additional requirements for GE seed production and operation. These amendments provide a pathway for commercial cultivation of GE food crops in China for the first time. Please refer to [GAIN Report CH2022-0013 Final Seed Regulations Published](#) for more information of the regulation amendments.

Following the updates to GE variety registrations, on June 8, 2022, the PRC's National Crop Variety Registration Committee (NCVRC) published the [National Registration Standards for Genetically Engineered Soybean Varieties \(Trial\)](#) and [National Registration Standards for Genetically Engineered Corn Varieties \(Trial\)](#) (link in Chinese) with immediate effect. The publication of these standards established a clear set of requirements for local developers applying for variety registration of GE corn and soybeans; a further indication of the PRC's intent to move toward commercial cultivation of GE food crops in the near future. Please refer to [GAIN Report CH2002-0070 GE Soybean and Corn Variety Registration Standards Issued](#) for unofficial translations of the two standards.

Biotechnology and Planting Seeds

The PRC continues to advance its agricultural biotechnology development and regulatory framework in preparation for commercial cultivation of domestically developed GE crops. MARA released the revised Administrative Measures for the Safety Assessment of Agricultural GMOs and the first ever regulations on gene-edited plants "Guidelines for Safety Evaluation of Gene-Edited Plants for Agricultural Use (Trial)" in late January. However, with the exception of

GE cotton and papaya, the PRC has not yet approved any GE food or feed products for domestic commercial cultivation.

The PRC continues to prohibit foreign agricultural biotechnology developers' foreign direct investment in the biotech sector and prohibits the cultivation of foreign-developed biotech products in China. Please refer to [GAIN CH2022-0112 Agricultural Biotechnology Annual](#) for detailed information on China's biotechnology sector developments.

The Supreme People's Court Issues a “Guiding Opinions” to Strengthen Intellectual Property Protection in Seed Industry

On March 2, 2022, the Supreme People's Court of China issued an opinion clarifying the requirements for criminal trials related to seeds. Entitled "Guiding Opinions on Further Strengthening the Criminal Trial Work Involving Seeds", the opinion covers the application of law to seed-related crimes, and strengthens enforcement mechanisms. This opinion is the latest in a trend of messaging and policies by the PRC to strengthen variety protection and encourage a market environment for the seed industry with intellectual property protections for the seed industry. Please refer to [GAIN Report CH2022-0031 Supreme People's Court Strengthens Seed Variety Protections](#) for more information on the Guiding Opinions.

China's PVP Applications Maintain Rapid Growth

In China, plant variety protection (PVP) approval must meet the following three conditions:

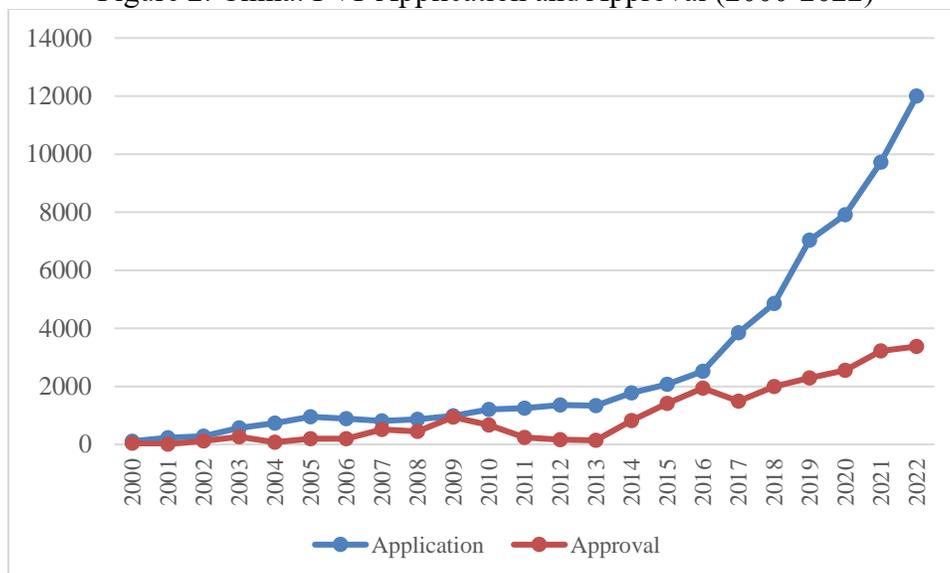
1. The plant shall belong to the genus or species of plants listed in the [National Catalogue of Protected Plant Varieties](#);
2. The variety has novelty, distinctness, uniformity, and stability; and,
3. The variety has an appropriate name and can be distinguished from the name of a known variety of the same or similar plant genus or species.

China's annual PVP application numbers have been the highest among International Union for the Protection of New Plant Varieties (UPOV) members since 2017. In total China has received over 62,000 PVP applications and granted over 23,100 approvals as of the end of 2022. In 2022, the PVP Office received 11,999 applications and granted 3,375 approvals. The upward trend of PVP applications indicates the growth of the breeding industry and increased awareness of the importance of plant variety protections. The strengthening of protections and enforcement has also contributed to more interest in parties submitting application.

On April 10, 2023, the Development Center of Science and Technology of MARA published [Questions and Answers on EDVs](#) (link in Chinese) on its website to promote public awareness of the EDV system. The People's Republic of China (PRC) amended Seed Law (see [GAIN Report CH2021-0185 Final Seed Law Published](#)), effective on March 1, 2022, established the EDV system and encourages the breeding of initial varieties. Subsequently, on November 21, 2022, MARA released the revised draft for comments of the PRC Plant Variety Protection (PVP) Regulations (see [GAIN Report CH2022-0127 China Releases Plant Variety Protection Regulations for Comments](#)). One of the major revisions of the PVP regulations is to incorporate the implementation steps and methods of the EDV system. The final version of the PVP

Regulation has not been published. Please refer to [GAIN CH2023-0065 MARA Publishes Information to Improve Public Awareness of Essentially Derived Varieties](#) for more information of the Q&A on EDVs.

Figure 2. China: PVP Application and Approval (2000-2022)



Source: MARA

On April 10, MARA’s Plant Variety Protection Office published a notice on [Further Clarifying the Submission Requirements for Sexual Propagation Materials](#) (link in Chinese). According to the Notice, nearly one-fifth of the sexual propagation materials submitted each year are not qualified and this has slowed progress for variety authorizations. The Notice enumerates the requirements for sexual propagating material application submissions for plant variety rights. Please refer to [GAIN CH2023-0064 Plant Variety Protection Office Clarifies Sexual Propagation Material Submission Requirements](#) for more information on the requirements.

Foreign Investment Negative List

The 2021 Special Administrative Measures on Access to Foreign Investment was released on December 27, 2021. However, the 2022 Negative List has not been released as of mid-June 2023. Please see [2021 Plant Seeds Annual Report](#) for the PRC’s foreign investment policies covering the seed industry.

III. SEED MARKET

Note: The marketing year for all seeds of all crops runs October-September.

In March 2023, the National Agro-Tech Extension and Service Center of MARA released major crop seed supply and demand data in 2023 at the 19th National Seed Information Exchange and Commodity Trading Fair. Major information as below:

Corn

China's hybrid corn seed production is estimated at 1,360,000 metric tons (MT) in MY2022/23 (October-September), 31 percent increase from MY2021/22 because of expanded corn seed planting area. MARA statistics show hybrid corn seed area increased 35 percent to 244,000 ha in MY2022/23, record high in last six years. The significant increase is mainly because of the low corn seed stocks. Please see [2021 Plant Seeds Annual Report](#) for more analysis on increased corn seed area. Due to weather-related reductions in major producing areas in Northwest and Southwest China, the national average yield of hybrid corn seed is 5,580 kg/ha in 2022, which is at the median level in the past five years. Gansu province continues to be largest corn seed producers in China, accounting for about 48 percent of total corn seed area in MY2022/23.

China's total corn seed supply in MY2022/23 is estimated at 1.65 MMT, including 290,000 MT of carry-in stocks. MARA estimates MY2022/23 hybrid corn seed usage at 1.15 MMT, causing stocks to increase to 500,000 MT. In terms of price, the national average sales price of see corn is expected to be RMB35.4/kg (US\$2.35/lb.)¹, an increase of 14 percent over the same period last year. However, industry sources estimate prices will increase much higher, mainly because of a 20 percent rise in production costs from the previous year.

Rice

Hybrid rice seed production is estimated at 280,000 MT in MY2022/23, a five percent increase from MY2021/22 due to larger planting area. MARA statistics show hybrid rice seed area increased 25 percent to 131,000 ha in MY2022/23. Among the 131,000 ha, 16,100 ha is early rice, 84,000 ha is middle rice, and 31,000 ha is late rice. The average yield of hybrid rice seed in MY2022/23 is 2,160 kg/ha, about a 22 percent decrease from the previous year due to poor weather conditions.

Total hybrid rice seed supply in MY2022/23 is estimated at 330,000 MT, and total hybrid rice seed demand (domestic use and exports) in MY2022/23 is estimated at 270,000 MT, a 15 percent increase from MY2021/22 due to higher average seed usage and bigger hybrid rice area. In terms of price, the national average sales price of hybrid rice seeds is estimated at RMB 78.44/kg (\$5.20/lb.), an increase of four percent over the same period last year.

Conventional rice seed production is estimated at 1.18 MMT in MY2022/23, a 24 percent increase from MY2021/22. MARA estimates MY2021/22 conventional rice seed demand at 602,000 MT, a five percent decrease from MY2021/22 as the result of larger hybrid rice planting. In terms of price, the national average sales price of conventional rice seeds is expected at RMB 10.62/kg (\$0.70/lb.), an increase of four percent over the same period last year.

Soybean

Soybean seed production is estimated at 880,000 MT in MY2022/23, a 17 percent increase from My2021/22. China's soybean seed supply is sufficient to meet domestic needs.

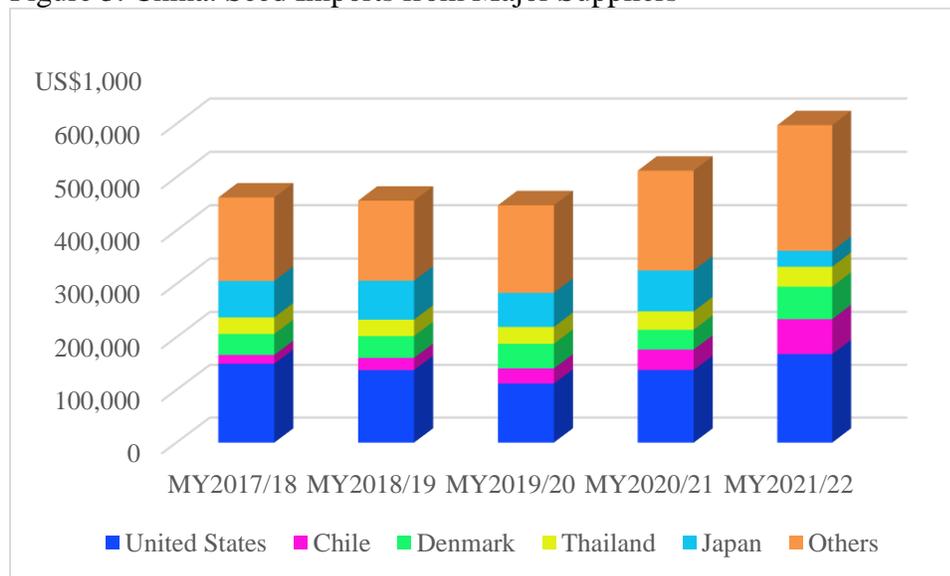
¹ The exchange rate is 1 US dollar = 6.85 RMB

IV. TRADE

Imports

China's seed imports are forecast 25 percent lower in MY2022/23 from MY2021/22 due to lower grass seed imports which account for nearly 80 percent of China's total seed imports in volume (see grass seed import section below). China imports relatively little seeds for major grain crops such as corn, wheat, rice, and soybean due to market access limitations for these key crops and owing, in part, to the PRC's self-sufficiency goals in grains. Vegetable and grass seed are the top two imported seeds, accounting for 78 percent and 80 percent of volume and value respectively in China's MY2021/22 total seed imports. The United States continues to be the largest seed supplier to China, accounting for 28 percent by value of China's MY2020/21 planting seeds imports, followed by Chile (11 percent), Denmark (10 percent), Thailand (six percent), and Japan (five percent). See figure 3 below.

Figure 3. China: Seed Imports from Major Suppliers



Source: Trade Data Monitor LLC.

Table 1. China: Planting Seed Imports from the World

HS Code	Description	Value (U.S. \$1,000s)			Volume (MT)		
		10/19 - 09/20	10/20 - 09/21	10/21- 09/22	10/19 - 09/20	10/20 - 09/21	10/21- 09/22
	Planting Seeds	447,353	512,200	597,476	82,498	102,159	94,819
100410	Oat Seed	4,909	7,572	8,696	8,170	12,753	10,496
100510	Corn Seed	4,949	3,260	4,499	391	261	355
100710	Sorghum Seed	2	0	7	2	0	19
12060010	Sunflower seeds	3,233	9,670	5,527	26	29	19
120770	Melon Seeds	9,342	6,714	10,356	34	18	31
120910	Sugar Beet Seeds	21,480	23,441	14,610	744	639	407
120921	Alfalfa Seeds	9,691	16,628	10,935	3,479	4,511	2,283
120922	Clover Seeds	8,592	13,255	13,307	2,507	3,350	2,602
120923	Fescue Seeds	22,095	38,484	54,277	11,512	19,585	12,937
120924	Kentucky Grass Seeds	10,785	20,921	31,693	2,964	6,566	5,334
120925	Rye Grass Seeds	46,483	44,641	92,064	37,083	30,727	39,922
120929	Forage Seeds	360	2,442	1,288	13	2,091	990
120930	Herbaceous Seeds	37,209	35,192	33,378	323	55	64
120991	Vegetable Seeds	240,429	244,076	276,155	9,020	10,572	10,347
120999	Fruit and Spores Seeds	27,793	45,903	40,685	6,229	11,001	9,013

Source: Trade Data Monitor LLC.

China imposed additional retaliatory tariffs on planting seeds on September 1, 2019. However, the tariff does not apply to grass (rye, Kentucky, fescue, oat, and clover) or vegetable seed, which combined account for 85 percent of China's total seed imports from the United States in value in MY2021/22. Please see Annex I for tariff schedule on U.S. planting seeds.

Table 2. China: Planting Seed Imports from the United States

HS Code	Description	Value (U.S. \$1,000s)			Volume (MT)		
		10/19-09/20	10/20 - 09/21	10/21-09/22	10/19-09/20	10/20-09/21	10/21-09/22
	Planting Seeds	112,045	137,819	167,992	45,156	54,519	35,641
100410	Oat Seed	1,469	2,124	2,053	2,470	3,736	2,964
100510	Corn Seed	10	0	0	3	0	0
100710	Sorghum Seed	0	0	5	0	0	19
12060010	Sunflower seeds	147	282	157	2	1	1
120770	Melon Seeds	43	51	109	0	0	1
120921	Alfalfa Seeds	479	303	1,138	89	48	187
120922	Clover Seeds	920	4,459	579	384	1,151	160
120923	Fescue Seeds	18,033	34,592	43,158	9,265	17,557	9,876
120924	Kentucky Grass Seeds	9,590	18,306	24,260	2,598	5,556	4,027
120925	Rye Grass Seeds	28,775	20,752	26,921	26,550	17,857	12,859
120929	Forage Seeds	0	1,926	709	0	1,590	480
120930	Herbaceous Seeds	17,147	8,356	5,443	12	16	7
120991	Vegetable Seeds	17,314	13,392	33,355	485	429	192
120999	Fruit and Spores Seeds	18,119	33,275	30,102	3,297	6,575	4,869

Source: Trade Data Monitor LLC.

Vegetable Seed Imports

China's MY2022/23 vegetable seed imports are forecast at 11,500 MT, about 10 percent increase from MY2021/22 driven by increased demand for high-end and specialty vegetable seeds in China. In addition, according to industry statistics, China's vegetable area has maintained a growth rate of 1.5-2 percent the last three years, and the trend is expected to continue to meet China's increasing demand for vegetables.

MARA data estimates China's annual vegetable seed usage in China at 100,000 tons with imports varying from 9,000-10,500 tons over the last five years, accounting for about 10 percent of the total vegetable seed usage.

Chinese vegetable seed companies are increasingly producing seed overseas, particularly in South America to take advantage of the similar climate and reverse seasons, and then re-export the seed to China. China's primary imported vegetable seeds are tomato, broccoli, carrot, onion, and spinach.

Italy, Thailand, Indonesia, and Denmark supplied 90 percent of China's vegetable seed imports in MY2021/22 by volume. Though the United States accounted for less than 1 percent of China's vegetable seed import volume it accounted for 12 percent by value due to the high unit price, falling behind Chile which accounted for two percent by volume as well but 23 percent of the value. The price of imported vegetable seed in MY2021/22 from the United States was US\$173,984 per ton compared to US\$314,022 from Chile while the average price from all importers to China was US\$26,690 per ton according to China Customs data.

Grass Seed Imports

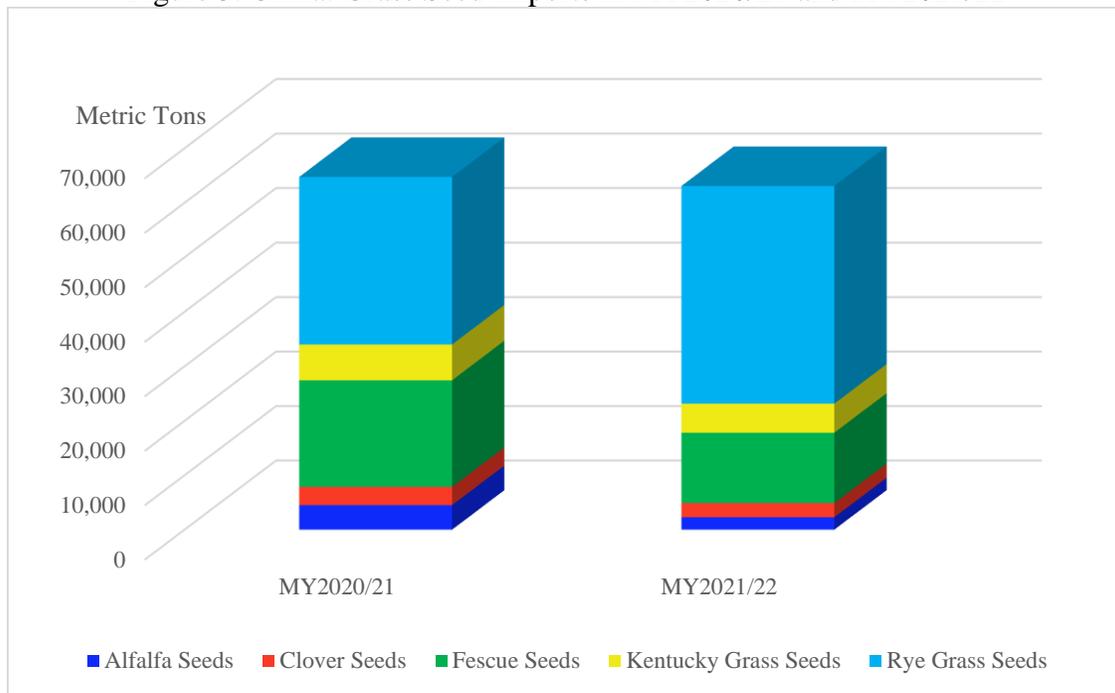
Post forecasts MY2022/23 grass seed (alfalfa, rye, fescue, clover, oat and Kentucky) imports down 35 percent from MY2021/22 due to weak domestic demand and high stocks. Despite soaring prices, China's 2021/22 grass seed imports did not drop as expected mainly due to high imports of rye grass seeds, which accounted for 63 percent of China's total grass seed imports. Rye grass seed imports increased 30 percent though the average import price increased 59 percent in MY2021/22 from previous year. Particularly, the price of rye grass seeds imported from the United States increased 80 percent due to decreased production (Please refer to [Planting Seed 2021 Annual CH2022-0005](#) for more information).

Fears of supply shortages and anticipation of strong sales in MY20/21 drove importers to stock up despite high prices. Chinese importers have increased purchases from Argentina, Denmark and New Zealand while importing less from the United States. As a result, China's MY2021/22 rye grass seed imports from the United States declined 28 percent, while imports from Argentina, Denmark and New Zealand increased 538 percent, 62 percent, and 60 percent respectively. However, the demand for grass seeds (both forage seeds and lawn seeds) in MY2021/22 is weak due to the impact of the epidemic and the economic turndown. High imports have turned into inventory, which will further reduce imports in MY2022/23. According to ChinaCustoms data, China's grass seed imports declined 65 percent in the first five months of MY2022/23 from the same period of MY2021/22. Industry contacts voiced the inventory is decreasing with the significant decline in imports, and the imports is expected to rebound in the second half of the marketing year.

In February 2022, MARA released "[14th Five-Year Plan for National Forage Industry Development Plan](#)" (link in Chinese). According to the "Plan", in 2020, China's forage planting area is around 5.3 million hectares, among which, 2.5 million hectares are silage corn, 670,000 hectares are oat grass and rye grass, and 430,000 hectares are alfalfa. China's forage production will increase to 98 million tons by 2025 from the 71.6 million tons in 2020. Although the "Plan" targets to increase the overall self-sufficiency rate of forage seeds (including silage corn seeds) to 70 percent by 2025², industry doubts considering China's low breeding capacity of forage seeds, high production costs and limited arable land.

² The "Plan" does not provide the current self-sufficiency rate of forage seeds. Post estimates at 50-55 percent based on various sources.

Figure 3. China: Grass Seed Imports in MY2020/21 and MY2021/22



Exports

China's MY2022/23 seed exports are forecast at 30,000 MT, about 10 percent decline from MY2021/22 due to lower rice seed exports, which accounts for over 70 percent of China's total seed exports in volume. Rice seed accounted for 76 percent of China's total seed exports in MY2021/22 by volume, but only 34 percent by value. Meanwhile, vegetable seed accounted for 12 percent of total seed exports by volume in MY2021/22, while it accounted for 46 percent by value.

China's MY2022/23 hybrid rice seed exports are forecast at 22,000 MT, about 12 percent decrease from MY2021/22. According to industry sources, traditional rice seed importing countries may reduce their imports with increasing locally produced rice seed supply because of Chinese rice seed companies and multinational seed companies investment in their countries. Pakistan, the Philippines, and Vietnam are the largest buyers of Chinese rice seed, which combined account for 97 percent of China's total rice seed exports in MY2021/22.

China's MY 2022/23 vegetable seed exports are forecast at 3,900 MT, stable from the previous year. According to industry sources, most of the exported vegetable seeds are contracted by foreign enterprises (foreign companies entrust Chinese producers to produce designated seeds and then export to them), these mainly include tomato, lettuce, beans, and cabbage seeds.

Major exported vegetable seeds include tomato, lettuce, beans, and cabbage. Vietnam, Netherlands, Italy, South Korea, and the United States are the largest buyers of China's exported vegetable seeds, accounting for about 55 percent of China's vegetable seed exports in MY2021/22.

Table 4. China: Seed Exports to the World

HS Code	Description	Value (US\$1,000s)			Volume (ton)		
		10/19 - 09/20	10/20 - 09/21	10/21 - 09/22	10/19 - 09/20	10/20 - 09/21	10/21 - 09/22
	Planting Seeds	240,599	253,220	287,487	29,081	29,798	33,511
100510	Corn (Maize) Seed	3,224	3,864	5,464	806	1,001	1,386
10061021	Long rice seeds	73,034	74,462	93,973	20,524	20,151	23,917
10061029	Other rice seeds	5,512	6,306	4,813	1,695	1,941	1,424
100710	Grain Sorghum Seed	0	0	27	0	0	20
120110	Soybean Seed	296	372	323	79	101	76
120230	Peanut Seed	39	29	5	19	9	1
120721	Cotton Seeds	79	159	582	5	79	426
12077010	Melon Seeds	15,346	16,684	19,303	146	161	159
120910	Sugar Beet Seeds	1	0	0	0	0	0
120921	Alfalfa Seeds	221	196	32	82	52	8
120929	Forage Seeds	1,130	1,025	1,331	437	333	227
120930	Herbaceous Seeds	18,377	22,256	24,488	859	952	1,045
120991	Vegetable Seeds	119,380	122,884	131,664	3,803	4,252	4,067
120999	Fruit Seeds	3,958	4,983	5,482	625	764	755

Source: China Customs

Table 5. China: Schedule of Tariffs on U.S. Planting Seeds

HS Code	Product Description	MFN* Rate	Section 232 Retaliatory	Section 301 Retaliatory*	Total Applied Tariff
	Implementation Date	Jan 1, 2022	Apr 2, 2018	Feb.14, 2020	Feb.14, 2020
10021000	Rye Seed	0%	0%	5%	5%
10031000	Barley Seed	0%	0%	5%	5%
10041000	Oats Seed	0%	0%	5%	5%
10071000	Grain Sorghum Seed	0%	0%	5%	5%
10089010	Other Cereals Seed	0%	0%	5%	5%
12011000	Soya Beans for Cultivation	0%	0%	5%	5%
12023000	Ground nuts, for cultivation	0%	0%	5%	5%
12072100	Cotton seeds, for cultivation	0%	0%	5%	5%
12091000	Sugar beet seed	0%	0%	5%	5%
12092990	Other forage seeds	0%	0%	5%	5%

Source: China Customs

*Eligible for exclusion by Chinese importers who complete the process

Attachments:

No Attachments.