CCM Data & Business Intelligence

Overview of Pesticide Industry in China in 2022

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Executive summary

China's pesticide technical output in Jan.–Sept. 2022 dropped by 2.60% YoY, coupling with the 16.7% and 26.6% drops in export value and volume, respectively. There are potential pesticide technical capacities completed in construction in H1 2022, ready for commissioning and/or production operation.

Although the occurrence of pests, diseases, weeds and rodents has mitigated, the overall situation remains severe in China in 2022. In 2022, the domestic demand for major pesticides saw marginal growth. However, by 2025, the usage of chemical pesticides (converted by 100% AI) is estimated to reduce, by 5% for major food crops (rice, wheat and corn), and by 10% for the economic crops.

In China, the pesticide performance for 2022 varied by products. China's glyphosate market suffers tight supply in 2022, while overall demand declines but is deemed prospective in the year to come. The glufosinate-ammonium technical supply in China has been stable, with new capacity launching in 2023. In Q2–Q3, the supply of acetochlor technical went up as some major manufacturers resumed production, after seeing a shortfall in Q1.

Methodology

The report is drafted by diverse methods as follows:

- Desk research

The sources of desk research are various, including published magazines, journals, government statistics, industrial statistics, customs statistics, association seminars as well as information from the Internet.

- Internet

CCM contacted with players in the domestic agrochemical industry through B2B websites and software as well as obtained registration information on the internet.

- Data processing and presentation

The data collected and compiled are sourced from:

- CCM's database
- China Customs
- Published articles in periodicals, magazines, journals and third-party databases
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, joint ventures, service suppliers and governments
- Third-party data providers
- Comments from industrial experts
- Professional databases from other sources
- Information from the internet

The data from various sources have been combined and cross-checked to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions were held in order to analyse the data and draw the conclusions.

1 Overview of pesticide supply situation in China

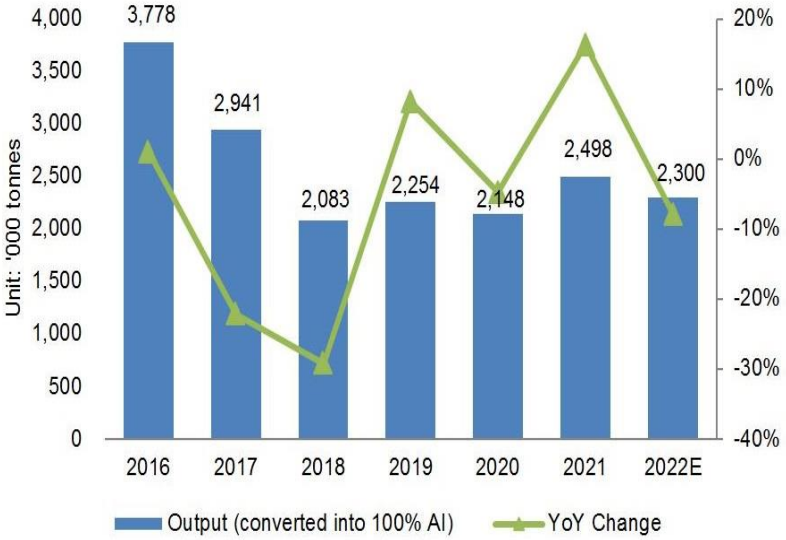
1.1 Situation of China's pesticide supply, Q1–Q3 2022

Since 2016 when the Ministry of Agriculture (presently known as the Ministry of Agriculture and Rural Affairs or MARA) initiated the *Action Plan for Zero Growth in the Use of Fertilisers and Pesticides by 2020* (the Action Plan) in 2015, China's pesticide output of chemical pesticides has diminished. During the period when domestic supply and overall demand for pesticide technical turn largely stable, the pesticide export trade plays an increasingly important role in the development of the pesticide industry in China. Data from the National Bureau of Statistics (NBS) show that in Q1–Q3 2022, China's pesticide output and exports (both in value and volume) have pointed to shrinking numbers on a year-on-year basis, mainly due to impacts of cyclical fluctuations of the industry, declining global demand, governmental policies on economic and environmental protection. These have led to predictions that overall output and demand of China's chemical pesticides will remain on a downswing.

- Declined production of pesticide technical

Under the implementation of the Action Plan by 2020, highly toxic varieties of organophosphorus pesticides—mostly insecticides—were lost out. China's pesticide technical output has been on a steady decline. The collective pesticide technical output (converted into 100% AI volume) by enterprises with annual revenue of more than RMB20 million was 2.148 million tonnes in 2020 and 2.498 million tonnes in 2021. Such total in Q1–Q3 2022 was down by 2.60% year on year, with a 1.86% drop in Sept. month on month. The estimates for 2022 are 2.300 million tonnes, down by 7.91% year on year, as shown in NSB data.

Figure 1.1-1 China's pesticide technical output in 2016–2022E



Note: The output here is converted into 100% AI volume.
Source: National Bureau of Statistics (NBS) and CCM

1.2 Situation of pesticide exports in China, Q1–Q3 2022

- Decreasing exports of pesticide technical both in value and volume

After a double-digit year-on-year growth in Q1 2022, China's export value of pesticide technical (herbicide, insecticide and fungicide) came in with large decreases in the next two quarters. In Jan.–Sept. 2022, the total export value of pesticide registered a 16.7% reduction compared with the same period last year. By category, herbicide technical export value accounted for 61.4% of the total in the period, down by 19.0% YoY; export values of insecticide technical and fungicide technical were down by 20.4% and up by 2.8% YoY, respectively.

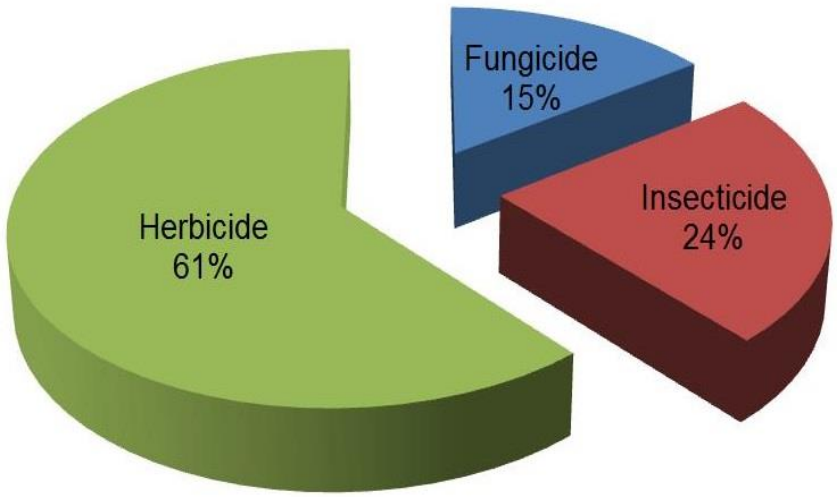
In Jan.–Sept. 2022, China's export volume (in real terms) of pesticide technical reduced, down by nearly 26.1% year on year, to 459,492 tonnes on aggregate, breaking down to 348,223 tonnes (75.8%) of herbicide, 61,896 tonnes (13.5%) of fungicide and 49,373 tonnes.

Table 1.2-1 Export value of China's pesticide technical by category in Q1–Q3 2022, million USD

Time	Herbicide	Insecticide	Fungicide	Total	YoY Change of the Total
Q1 2022	1,201.18	459.03	258.16	1,918.37	38.03%
Q2 2022	891.91	270.32	216.90	1,379.13	-21.85%
Q3 2022	597.89	298.73	186.15	1,082.76	-48.49%
Total in Q1-Q3	**2,690.97**	**1,028.07**	**661.20**	**4,380.25**	**-16.67%**

Source: Tranalysis

Figure 1.2-1 Composition of export value of China's pesticide technical by category in Q1–Q3 2022



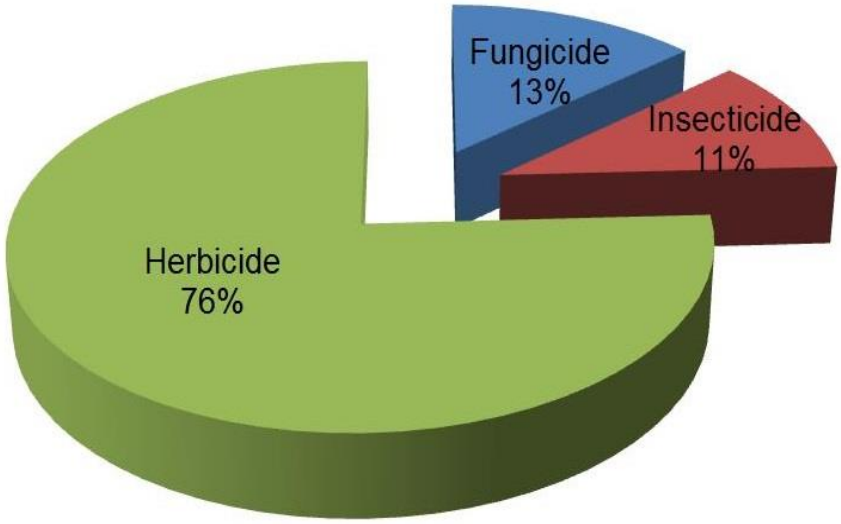
Source: Tranalysis

Table 1.2-2 Export volume (in real terms) of China's pesticide technical by category in Q1–Q3 2022, tonne

Time	Herbicide	Insecticide	Fungicide	Total	YoY Change of the Total
Q1 2022	160,867.767	18,572.925	22,504.738	201,945.430	12.28%
Q2 2022	111,965.303	15,705.625	19,198.556	146,869.484	-28.53%
Q3 2022	75,390.313	15,094.841	20,192.346	110,677.500	-53.12%
Total in Q1-Q3	**348,223.384**	**49,373.390**	**61,895.640**	**459,492.414**	**-26.06%**

Source: Tranalysis

Figure 1.2-2 Composition of export volume (in real terms) of China's pesticide technical by category in Q1–Q3 2022



Source: Tranalysis

1.3 Newly added capacities in H1 2022

According to CCM's survey, the overall production of pesticide in China has run on a regular basis in 2022, though some operations have become idle due to maintenance or environmental impact inspection in Aug. and Sept., leading to a tighter supply in later period. In Nov. and Dec., COVID-19 cases spred after the country's easing restrictions. Approaching the New Year's Day and Chinese Spring Festival, factory operation has reduced to a low level. The pesticide market enters a mild off-season.

There are potential pesticide capacities completed in construction in H1 2022, ready for commissioning and production operation, likely to affect the supply and demand situation of China's pesticide industry in the coming future.

Table 1.3-1 Potential capacities of herbicides in China, H1 2022

No.	Company name	Parent company	Concerning products	TC capacity, t/a	Status	Province /Region
1	Hebei Veyong Bio-chemical Co., Ltd.	Limin Chemical Co., Ltd.	Fosetyl-aluminium, glufosinate-ammonium, spinosad, pleuromulin and tylosin	18,500	Ready for trial production	Hebei Province
2	Ningxia Wynca Technology Co., Ltd.	Zhejiang Wynca Chemical Industrial Group Co., Ltd.	Glufosinate-ammonium	3,000	Trial production	Ningxia Autonomous Region
3	Liaoning Longtian Chemical Technology Co., Ltd.	/	Mesotrione	1,000	In operation	Liaoning Province
4	Jiangsu KingAgroot Resistant Weeds Control Co., Ltd.	Qingdao KingAgroot Crop Protection Services Co., Ltd.	Bipyrazone, cypyrafluone, fenpyrazone, tripyrasulfone	1,000	Construction accepted	Jiangsu Province
5	Hebei Lansheng Biotechnology Co., Ltd.	/	Clethodim	4,000	In operation	Hebei Province

Source: CCM

Table 1.3-2 Potential capacities of insecticides in China, H1 2022

No.	Company name	Parent company	Concerning products	TC capacity, t/a	Status	Province /Region
1	Inner Mongolia Benxing Chemical Co., Ltd.	/	Chlorpyrifos, tebuconazole	20,000	Trial production	Inner Mongolia Autonomous Region
2	Jiangsu Youjia Crop Protection Co., Ltd.	Jiangsu Yangnong Chemical Co., Ltd.	Bifenthrin, fluazinam, difenoconazole, propiconazole, mesotrione	15,800	Trial production	Jiangsu Province
3	Qingdao Hengning Biotechnology Co., Ltd.	/	Chlorfenapyr, diafenthiuron, difenoconazole and propiconazole	9,000	Trial production	Shandong Province
4	Inner Mongolia Benxing Chemical Co., Ltd.	/	Triclopyr, triclopyr-butotyl and penoxsulam	5,000	Production of Phase I	Inner Mongolia Autonomous Region
5	Changqing (Hubei) Bio-tech Co., Ltd.	Jiangsu Changqing Agrochemical Co., Ltd.	Fipronil, thiamethoxam	3,600	Trial production	Hubei Province
6	Jiangsu Xinnong Chemical Co., Ltd.	Zhejiang Xinnong Chemical Co., Ltd.	Chlorpyrifos-methyl	3,000	Trial production	Jiangsu Province
7	Changqing (Hubei) Bio-tech Co., Ltd.	Jiangsu Changqing Agrochemical Co., Ltd.	Cyhalothrin	2,000	In operation	Hubei Province
8	Hebei Sanlen Agrochemical Co., Ltd.	/	Fosthiazate, thifluzamide, thiamethoxam, mesotrione, heptafluoro pyrethrin, chlorempenthrin, transfluthrin and meperfluthrin	200	In operation	Hebei Province

Source: CCM

Table 1.3-3 Potential capacities of fungicides in China, H1 2022

No.	Company name	Parent company	Concerning products	TC capacity, t/a	Status	Province /Region
1	Limin Chemical Co., Ltd.	Limin Group Co., Ltd.	Fosetyl-aluminium	12,000	Trial production	Jiangsu Province
2	Shandong Dacheng Biochemical Co., Ltd.	/	Fosetyl-aluminium (with production lines for 14,000 t/a chlorothalonil under construction)	3,000	Construction accepted	Shandong Province
3	Hebei Xingbai Agricultural Technology Co., Ltd.	/	Spinosad	1,500	In operation	Hebei Province
4	Hebei Lansheng Biotechnology Co., Ltd.	/	Boscalid	500	In operation	Hebei Province

Source: CCM

2 Forecast of pesticide demand in China

2.1 Trend of China's pesticide consumption in 2022–2025

In 16 Nov. 2022, China's Ministry of Agriculture and Rural Affairs (MARA) released the *Action Plan for the Amount Reduction of Chemical Pesticides by 2025*. In 2021, the amount of pesticides used was 248,000 tonnes, 16.8% less than that in 2015. 46% of major crops were under green prevention and control on pests and diseases, 23 percentage points higher than that in 2015; and 42.4% of major crops were under professional prevention and control system, 9.4 percentage points higher over 2015. The registered pesticides with low and mild toxicity accounted for 85%+ of the total registration, with the increasing share of new highly-active and environmentally-friendly varieties increasing year by year.

MARA's objectives and tasks for 2025:

- Chemical pesticides: Usage (converted by 100% AI) in sown areas for rice, wheat, corn and other major food crops reduces by 5% and for fruit, vegetables, tea and other economic crops down by 10%;
- Green prevention and control: Biological pesticides cover 55%+ of major crop areas and 100% of fruit-, vegetable- and tea-growing areas;
- Professional prevention and control: Cover 45%+ of areas for three major crops (corn, rice and wheat) and 100% of the high-quality and efficient green production areas and modern agricultural industrial parks for grain, cotton, oilseed, sugar, etc.

2.2 Forecast on occurrence of diseases and pests, 2022

According to the National Agro-tech Extension and Service Centre (NATESC), in 2021, the year yielding the largest amount of grains of 682.85 tonnes in the past decade, the annual retrieved loss of grains accounted for 18.31%. In China, the occurrence of pests, diseases, weeds and rodents has mitigated, yet remaining severe in 2022. Referring to preliminary statistics, the country's major diseases and pests were found in the control area of 400 million ha and occurred on 208 million ha of major crops (i.e. corn, rice and wheat) in 2021.

Occurrence of diseases and pests of corn, rice and wheat in China in 2022

It is predicted that the occurrence area of pests and diseases on corn in China will be 66 million ha in 2022, 46 million ha affected by pests and 20 million ha by diseases, heavily hit by migratory pests (such as Spodoptera frugiperda and armyworm) and southern corn rust.

Table 2.2-1 Occurrence area of corn pests in China, 2018–2022E

No.	Pest	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Corn borer	21.00	20.00	19.33	13.33	17.33
2	Armyworm	4.00	4.33	4.53	4.33	4.00
3	*Spodoptera frugiperda*	N/A	N/A	6.67	1.33	5.33
4	Cotton bollworm	6.00	6.00	7.00	4.33	6.00
5	Aphid	5.00	N/A	4.00	4.00	4.33
6	*Athetis lepigone*	1.00	1.00	1.00	N/A	0.53
7	Underground insects	7.00	N/A	6.00	N/A	5.33
8	Thrip, spider mite, *Monolepta hieroglyphica* and other pests	10.00	0.00	14.00	10.67	3.13
Total		**54.00**	**N/A**	**56.00**	**38.00**	**46.00**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

Table 2.2-2 Occurrence area of corn diseases in China, 2018–2022E

No.	Disease	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Northern leaf blight	5.00	4.00	5.00	4.53	5.00
2	Southern leaf blight	3.00	N/A	3.00	2.80	2.47
3	Southern corn rust	3.00	2.66	3.75	2.00	5.33
4	Brown spot	2.00	N/A	N/A	2.20	1.73
5	Ear rot, gray leaf spot, anthracnose, top rot, gall smut, head smut, maize dwarf nematode disease, etc.	6.00	0.00	7.00	6.47	5.47
Total		**19.00**	**N/A**	**17.00**	**18.00**	**20.00**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

It is predicted that the occurrence area of pests and diseases on rice in China will be 82 million ha in 2022, 55 million ha affected by pests and 27 million ha by diseases, heavily attacked by *sogatella furcifera*, brown planthopper, rice leaf roller, *Chilo suppressalis*, rice sheath blight.

Table 2.2-3 Occurrence area of rice pests in China, 2018–2022E

No.	Pest	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Rice planthopper	25.33	20.00	20.00	26.67	20.67
2	Rice leaf roller	15.33	14.67	14.00	18.00	14.67
3	*Chilo suppressali*	14.67	12.00	14.00	14.00	13.33
4	*Tryporyza incertulas*	2.00	N/A	1.00	N/A	0.67
5	Gray planthopper, *Sesamia inferens*, *Chlorops oryzae*, army worm, *Chiloaunirilius, Tarsonemidae* and other pests	3.00	N/A	4.00	9.33	6.00
Total		**60.00**	**N/A**	**53.00**	**68.00**	**55.34**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

Table 2.2-4 Occurrence area of rice diseases in China, 2018–2022E

No.	Disease	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Rice sheath blight	17.33	16.67	17.33	18.00	16.00
2	Rice blast	5.00	4.67	4.33	4.67	4.00
3	Rice false smut	3.00	3.00	2.00	4.67	2.40
4	Southern rice black-streaked dwarf disease	1.00	N/A	1.00	0.67	0.13
5	Rice bacterial leaf blight, brown spot disease, *Meloidogyne* and other diseases	2.00	N/A	2.00	N/A	4.13
Total		**28.00**	**N/A**	**27.00**	**28.00**	**26.67**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

It is predicted that the occurrence area of pests and diseases on wheat in China will be 54 million ha in 2022, 27 million ha affected by pests and 27 million ha by diseases.

Table 2.2-5 Occurrence area of wheat pests in China, 2018–2022E

No.	Pest	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Aphid	15.33	14.67	14.00	13.33	14.00
2	Brown wheat mite	6.00	N/A	6.00	6.00	6.00
3	Wheat blossom midge	1.00	N/A	N/A	N/A	N/A
4	Underground insects, first-generation armyworm, wheat stem sawfly, *Sitodiplosis mosellana*, cotton bollworm, locust and other pests	6.00	N/A	N/A	6.67	6.67
Total		**28.00**	**N/A**	**25.00**	**26.00**	**26.67**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

Table 2.2-6 Occurrence area of wheat diseases in China, 2018–2022E

No.	Disease	Occurrence area, million ha				
		2018	2019	2020	2021	2022E
1	Wheat scab	6.67	10.00	6.00	6.00	6.00
2	Stripe rust	4.00	2.00	4.00	4.00	2.00
3	Sheath blight	8.67	N/A	8.00	8.00	8.00
4	Powdery mildew	6.00	N/A	6.00	6.00	6.00
5	Wheat leaf rust, full rot, stalk rot, root rot, leaf blight, virus-induced diseases, smut, cyst nematode disease, snow mold and other diseases	7.00	N/A	7.00	6.00	5.33
Total		**32.00**	**N/A**	**31.00**	**30.00**	**27.33**

Note: 2022E stands for 2022 estimated.
Source: National Agricultural Technology Extension Service Center (NATESC)

3 Market analysis of major pesticides in China

3.1 Glyphosate

In 2021, China's output of glyphosate technical hit 604,000 tonnes with the overall operating rate above 75%. The glyphosate market in China is highly concentrated, led by Zhejiang Wynca Chemical Group Co., Ltd., Hubei Xingfa Chemicals Group Co., Ltd. (Xingfa Group), Fuhua Tongda Chemical Co., Ltd. (Fuhua Tongda Chemical) and Nantong Jiangshan Agrochemical & Chemicals Co., Ltd.

-Supply

For 2022, the industrial performance slipped: In H1, logistics and transportation were largely disrupted by sporadic COVID-19 infections, and power shortage and rationing started affecting Chongqing City, Sichuan, Zhejiang and Jiangsu where major glyphosate manufacturers locate. In H2, manufacturers halted a portion of operation for maintenance, including Fuhua Tongda Chemical in Aug. and Xingfa Group in Sept. and Oct. By mid-Dec., the operating rate of major Chinese glyphosate technical manufacturers remains low.

-Demand

In 2022, the demand for glyphosate technical makes a slight decrease compared with 2021. 60.7% of glyphosate is consumed in food crops domestically: 37.5% and 22.0% go to rice and corn, respectively.

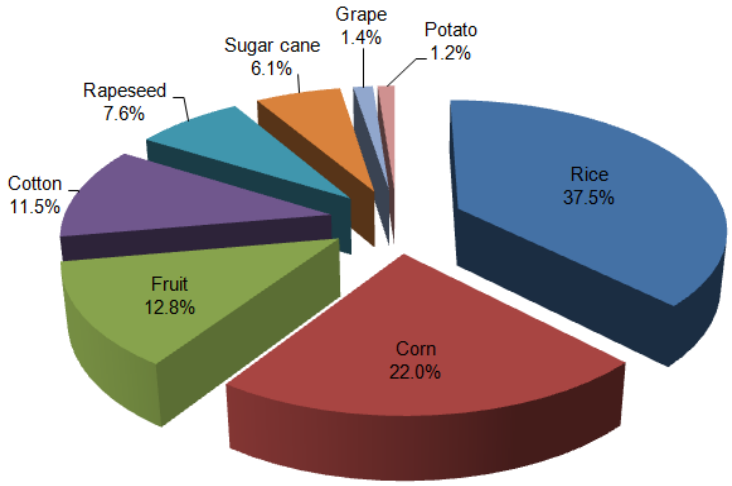
For the upcoming 2023, China's push for commercial glyphosate-resistant genetically modified seeds, for corn for example, is likely to boost glyphosate demand.

Table 3.1-1 China's consumption of glyphosate by main crops, 2022

Category	Volume ratio in 2022	YoY Change
Food crops	60.66%	-1.12%
Economic crops	39.34%	-0.24%
Total	**100.00%**	**-0.78%**

Source: CCM

Figure 3.1-1 Consumption share of glyphosate in China by crops, 2022



Source: CCM

Table 3.1-2 Major manufacturers of glyphosate technical in China, 2022

No.	Manufacturer
1	Zhejiang Wynca Chemical Group Co., Ltd.
2	Sichuan Hebang Bio-technology Co., Ltd.
3	Fuhua Tongda Chemical Co., Ltd.
4	Nantong Jiangshan Agrochemical & Chemicals Co., Ltd.
5	Hubei Xingfa Chemicals Group Co., Ltd.
6	Jiangsu Yangnong Chemical Group Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.2 Glufosinate-ammonium

In 2021, the output of glufosinate-ammonium technical in China was about 17,300 tonnes, and the market is led by main manufacturers including Lier Chemical Co., Ltd., Yongnong BioSciences Co., Ltd.

-Supply

The supply of glufosinate-ammonium technical in 2022 performed well and the overall production is in stable operation. Construction for new capacity of glufosinate-ammonium technical has made progresses in H1. For example, the 3,000 t/a glufosinate-ammonium technical of Ningxia Wynca Technology Co., Ltd. started trial production, and the 5,000 t/a of Hebei Veyong Bio-chemical Co., Ltd. (part of the 18,500 t/a technical project; a subsidiary of Limin Chemical Co., Ltd. in Hebei Province), finished construction and was ready for trial production.

-Demand

The finding of increasing glyphosate resistance in crops is expected to spur more application of glufosinate-ammonium, translating into about 28,400 tonnes in annual demand. However, glufosinate-ammonium technical demand has been flat in China in 2022, even in the traditional peak season, coupling with a high market inventory. It is predicted that the demand will not see a great increase in a short term. In China, 64.8% of glufosinate-ammonium is used on food crops in 2022; specifically, corn fields consume over 60.5% of glufosinate-ammonium technical in 2022.

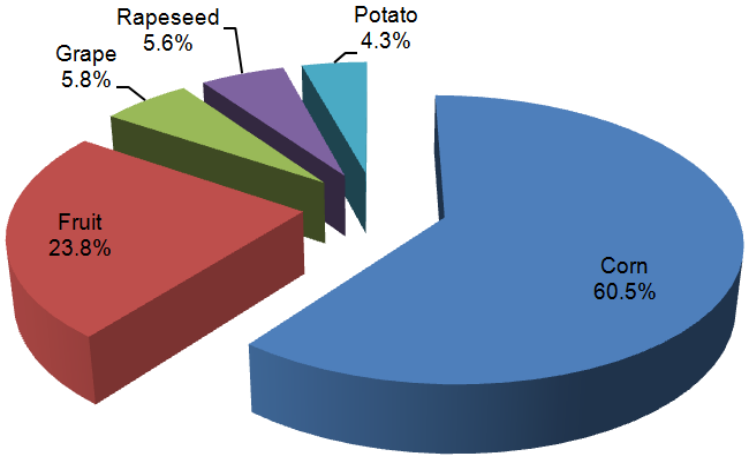
During China's industrialisation of the genetically modified crops, it is estimated that glufosinate-ammonium technical will mark an increase of 15,000 t/a in demand by 2026.

Table 3.2-1 China's consumption of glufosinate-ammonium by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Food crops	64.81%	-0.33%
Economic crops	35.19%	2.49%
Total	**100.00%**	**0.65%**

Source: CCM

Figure 3.2-1 Consumption share of glufosinate-ammonium in China by crops, 2022



Source: CCM

Table 3.2-2 Major manufacturers of glufosinate-ammonium technical in China in 2022

No.	Manufacturer
1	Lier Chemical Co., Ltd.
2	Yongnong BioSciences Co., Ltd.
3	Hebei Veyong Biochemical Pesticides Co., Ltd.
4	Shijiazhuang Richem Co., Ltd.
5	Fuhua Tongda Chemical Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.3 Acetochlor

In 2021, China's output of acetochlor technical was about 23,600 tonnes. The market is led by main manufacturers including Nantong Jiangshan Agrochemical and Chemicals Co., Ltd., Shandong Zhongshi Pesticide Co., Ltd., Jiangsu Changlong Agrochemical Co., Ltd. and Jiangsu Laike Crop Protection Co., Ltd.

-Supply

In Q1 2022, market supply of acetochlor technical was tight due to logsitic blockage as regional measures for COVID-19 prevention. Although transport conditions have improved since May, the demand was gradually weakened in the off season. In Q2–Q3, the supply went up as some major manufacturers resumed production. For example, Zhongnongfa Henan Agrochemical Co., Ltd. reopened its production lines for 10,000 t/a acetochlor technical, which had been suspended in 2021.

-Demand

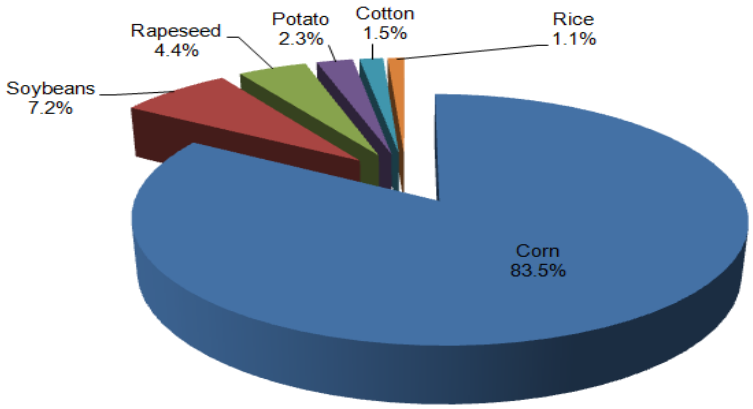
In 2022, China's crop production consumes about 16,800 tonnes of acetochlor technical, up by 0.7% YoY. Over 94% domestic consumption of acetochlor is in food crops: corn fields consume over 83.5% of acetochlor, followed by soybean and rapeseed fields. The usage of acetochlor on soybean-growing areas witnessed a 22% growth YoY, thanks to the governmental incentive to enlarge the sowing areas for soybean in early 2022.

Table 3.3-1 China's consumption of acetochlor by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Food crops	94.10%	0.91%
Economic crops	5.90%	-2.57%
Total	**100.00%**	**0.70%**

Source: CCM

Figure 3.3-1 Consumption share of acetochlor in China by crops, 2022



Source: CCM

Table 3.3-2 Major manufacturers of acetochlor technical in China in 2022

No.	Manufacturer
1	Nantong Jiangshan Agrochemical & Chemicals Co., Ltd.
2	Shandong Zhongshi Pesticide Co., Ltd.
3	Jiangsu Changlong Agrochemical Co., Ltd.
4	Zhongnongfa Henan Agrochemical Co., Ltd.
5	Jiangsu Laike Crop Protection Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.4 Chlorpyrifos

China's chlorpyrifos market is led by main manufacturers including Nanjing Red Sun Co., Ltd., Zhejiang Xinnong Chemical Co., Ltd., and Jiangsu Fengshan Group Co., Ltd.

-Supply

In 2022, China's chlorpyrifos manufacturers maintained normal operating rates and the domestic market supply is sufficient, except in April and May, when the operating rate was low for the epidemic control measures in some regions.

-Demand

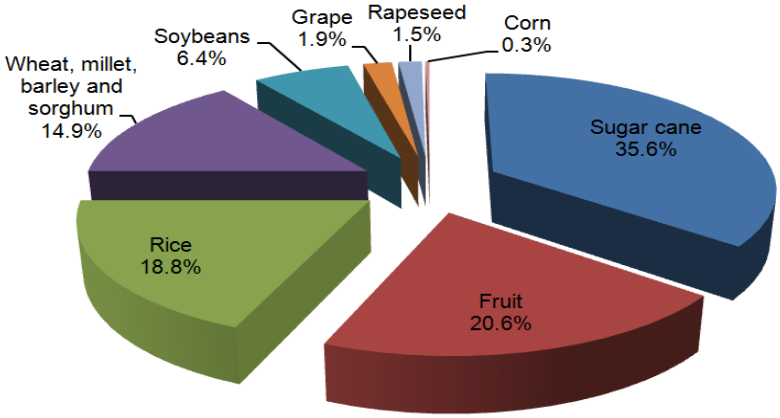
In 2022, the domestic consumption is about 4,700 tonnes. 59% of chlorpyrifos is mainly used for economic crops in China: 35.6% are for sugar cane, followed by fruit and rice.

Table 3.4-1 China's consumption of chlorpyrifos by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Economic crops	58.97%	-0.22%
Food Crops	41.03%	1.85%
Total	**100.00%**	**0.62%**

Source: CCM

Figure 3.4-1 Consumption share of chlorpyrifos in China by crops, 2022



Source: CCM

Table 3.4-2 Major manufacturers of chlorpyrifos technical in China in 2022

No.	Manufacturer
1	Nanjing Red Sun Co., Ltd.
2	Zhejiang Xinnong Chemical Co., Ltd.
3	Jiangsu Fengshan Group Co., Ltd.
4	Shandong Tiancheng Biological Technology Co., Ltd.
5	Hubei Benxing Chemical Industry Co., Ltd.
6	Jiangsu Baoling Chemical Co., Ltd.
7	Anhui Fengle Agrochemical Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.5 Imidacloprid

In 2021, China's output of imidacloprid technical was about 4,500 tonnes. The market is led by main manufacturers including Shandong Sino-Agri United Biotechnology Co., Ltd., Hailir Pesticides and Chemicals Group Co., Ltd., Jiangsu Changqing Agrochemical Co., Ltd. and Hebei Yetian Agrochemicals Co., Ltd.

-Supply

Due to China government's efforts in energy conservation and environmental protection, many small- and medium-sized pesticide enterprises have reduced or even stopped production of imidacloprid technical, resulting in a sharp decline in output in 2022. Some imidacloprid manufacturers have equipment maintenance for over 3 months, such as Hebei Yetian Agrochemicals Co., Ltd. in Jan.–March, and Hailir

Pesticides and Chemicals Group Co., Ltd. in Sept.–Nov. The supply shortage became more noticeable when regional infections were rising and overseas demand increased in Nov. and Dec. However, on the whole, the market demand for nicotinoid insecticides (incl. imidacloprid) was sluggish in 2022.

-Demand

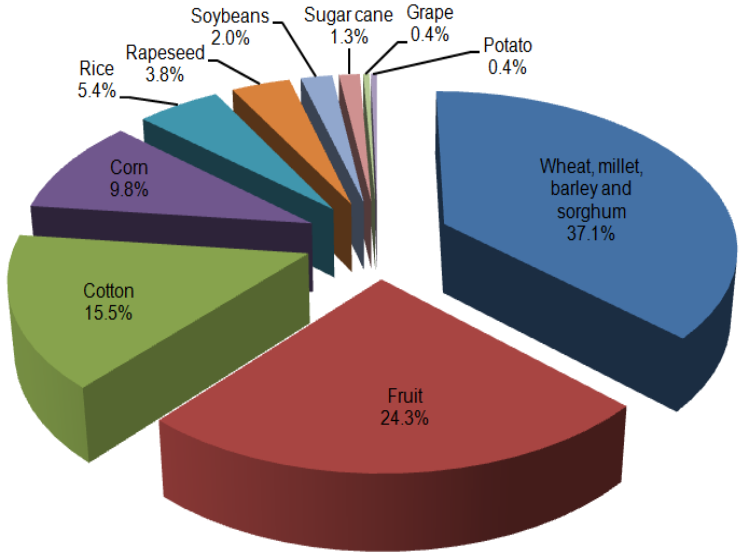
In 2022, China used about 850 tonnes of imidacloprid technical. Approximately 54.67% of domestic consumption of imidacloprid is in food crops: 37.1% are consumed by wheat, millet, barley and sorghum, while 24.3% and 15.5% are for fruits and cotton, respectively.

Table 3.5-1 China's consumption of imidacloprid by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Food crops	54.67%	-0.05%
Economic crops	45.33%	1.23%
Total	**100.00%**	**0.53%**

Source: CCM

Figure 3.5-1 Consumption share of imidacloprid in China by crops, 2022



Source: CCM

Table 3.5-2 Major manufacturers of imidacloprid technical in China in 2022

No.	Manufacturer
1	Shandong Sino-Agri United Biotechnology Co., Ltd.
2	Hailir Pesticides and Chemicals Group Co., Ltd.
3	Hebei Yetian Agrochemicals Co., Ltd.
4	Jiangsu Changqing Agrochemical Co., Ltd.
5	Jiangsu Yangnong Chemical Group Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.6 Pyraclostrobin

In China, in the highly competitive pyraclostrobin market, the main suppliers include Shandong Kangqiao Biotechnology Co., Ltd., Jiangsu Sevencontinent Green Chemical Co., Ltd. and Zhejiang Xinnong Chemical Co., Ltd., and more.

-Supply

The pyraclostrobin market has remained tight supply in 2022, especially in Feb. when most operations at factories were suspended during the Spring Festival break. Later in Aug., market inventory level went low again because of short-term maintenance of some major suppliers. In Q4, supply was further tightened and the stock situation will not improve much in the next few months in estimate, since the fierce competition has scared off some potential China's producers. A case in point is Anhui Dongzhi Guangxin Agrochemical Co., Ltd. that announced reconstruction of its capacity of 3,000 t/a pyraclostrobin into 40,000 t/a p-aminophenol in H1 2022.

-Demand

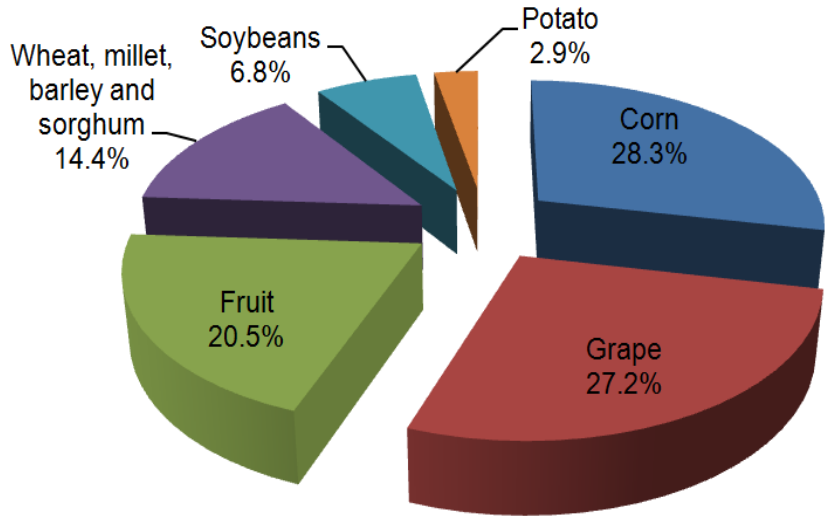
Pyraclostrobin has been widely used in crop fields since 2020, and the consumption are rising with an increase of more than 10% in 2022. In the year, around half of pyraclostrobin are used for economic crops: 27.2% for grape and 20.5 for fruit. Another half is for food crops: 28.3% for corn, followed by, wheat, millet, barley and sorghum.

Table 3.6-1 China's consumption of pyraclostrobin by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Food crops	52.35%	2.01%
Economic crops	47.65%	1.72%
Total	**100.00%**	**1.87%**

Source: CCM

Figure 3.6-1 Consumption share of pyraclostrobin in China by crops, 2022



Source: CCM

Table 3.6-2 Major manufacturers of pyraclostrobin technical in China in 2022

No.	Manufacturer
1	Shandong Kangqiao Biotechnology Co., Ltd.
2	Hailir Pesticides and Chemicals Group Co., Ltd.
3	Jiangsu Sevencontinent Green Chemical Co., Ltd.
4	Hebei Xingbai Agricultural Technology Co., Ltd.
5	Zhejiang Xinnong Chemical Co., Ltd.

Note: The list is not ranked.
Source: CCM

3.7 Trifloxystrobin

China's trifloxystrobin industry is led by main manufacturers including Qingdao Audis Bio-Tech Co., Ltd., Jiangsu Sevencontinent Green Chemical Co., Ltd., and Shandong Weifang Rainbow Chemical Co., Ltd.

-Supply

In H1 2022, market was in short supply of trifloxystrobin technical amid increasing demand but low inventory. In June, the supply was improved as demand began to fall. In H2, there were updates on new capacity construction projects, such as Jiangsu Corechem Co., Ltd.'s technical transformation project for 1,000 t/a trifloxystrobin and 1,000 t/a flufenacet receiving approval on the EIA document on 31 October.

-Demand

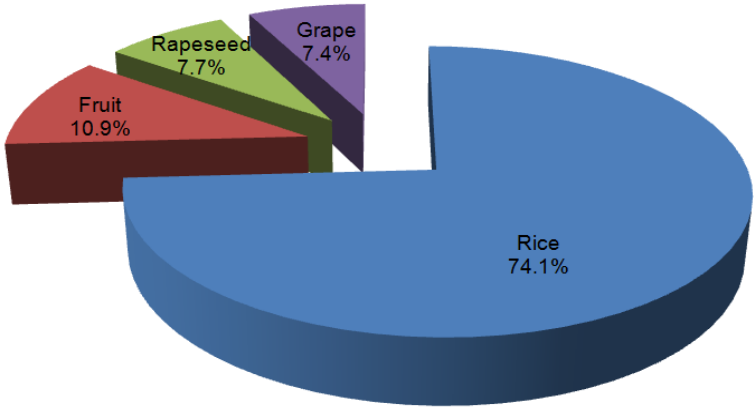
Food crops are the major consuming crops of trifloxystrobin, accounting for 74.1% of the total used in China.

Table 3.7-1 China's consumption of trifloxystrobin by main crops, 2022

Category	Volume Ratio in 2022	YoY Change
Food crops	74.10%	-1.57%
Economic crops	25.90%	1.06%
Total	**25.90%**	**-0.90%**

Source: CCM

Figure 3.7-1 Consumption share of trifloxystrobin in China by crops, 2022



Note: Fruits include pears, etc.
Source: CCM

Table 3.7-2 Major manufacturers of trifloxystrobin technical in China in 2022

No.	Manufacturer
1	Yongnong BioSciences Co., Ltd.
2	Qingdao Audis Bio-Tech Co., Ltd.
3	Jiangsu Corechem Co., Ltd.
4	Shandong Weifang Rainbow Chemical Co., Ltd.
5	Jiangsu Sevencontinent Green Chemical Co., Ltd.

Note: The list is not ranked.
Source: CCM

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