

Outlook for China Glyphosate Market 2018–2022

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1. Introduction

Outlook for China Glyphosate Market 2018–2022 is a preliminary report on China's glyphosate market finished by CCM in Dec. 2018. This report attaches importance to the following parts:

- Key factors influencing China's glyphosate industry
- Key upstream products of glyphosate technical including glycine, DEA, IDAN, paraformaldehyde, and PMIDA
- Supply of glyphosate technical (capacity, output, by producer and by production route) in China
- Key producers of glyphosate technical in China
- Supply and demand of glyphosate formulation by specification in China
- China's export of glyphosate technical, various glyphosate formulations and PMIDA, by key destination and by key trader, 2013–Aug. 2018
- Price of glyphosate technical and future trend
- Production technology & technology level of glyphosate technical in China
- Breakdown of glyphosate consumption by crop in China, 2013–2017

2. Approach for the report

The research for the report is carried out by the following steps:

- 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. A lot of work went into compiling and analysing the information obtained. Where necessary, checks were made with the Chinese suppliers regarding market information such as production, demand, use, competition, etc.

- Telephone interview

The interviewees cover:

- Producers
- Agricultural experts
- Traders
- Local governments
- Researchers
- Associations
- Equipment suppliers
- Raw material suppliers

CCM carried out extensive telephone interviews with all manufacturers of glyphosate technical and PMIDA producers as well as some producers of glyphosate formulations. Detailed production information and market situation were sourced and verified. Furthermore, players' comments on glyphosate industry were obtained.

For directly analysing the imports and exports of glyphosate technical, its formulations and PMIDA, many importers and exporters were contacted whenever the verification was needed.

Raw material (glycine, DEA, IDAN, PMIDA, etc.) suppliers were also contacted to help understand the price, supply as well as governmental policies on raw materials and their impact on the glyphosate industry.

- Export analysis

Analysis of export data (HS code 29310000, 38089311 and 38089319) from the China Customs helps work out China's exports of glyphosate (glyphosate technical, glyphosate formulations and PMIDA) by producer, trader and destination.



- **Data processing and presentation**

The data collecting and complying are sourced from:

- Published articles from Chinese periodicals, magazines, journals, the third-party database
- Government statistics & customs statistics
- Telephone interviews with Chinese producers, traders, governments and farmers
- Comments from industrial experts
- CCM's database
- Professional database in other sources
- Information from internet

The data from various ways have been combined to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions took place in order to analyse the data and draw conclusions from it.

- **Report generation**

Logical analysis and scientific ratiocination were conducted to generate the report, such as supply & demand analysis and cross-checking of all data. All the data and findings obtained through the above methods will be presented in the report clearly.

3. Executive summary

Glyphosate, the key active ingredient of Roundup, is one of the most commonly sold herbicides on the market today. With rapidly increasing demand, glyphosate has shared about XX% of the global herbicide market in terms of sales volume.

- Position of Chinese glyphosate in the world

China has become the largest production base of glyphosate technical in the world and has been supplying over XX% of the global production of glyphosate. Its output of glyphosate was about XXX tonnes in 2017 (converted to 95% technical), XX% of which was exported.

- Production

The domestic output of glyphosate technical increased from XXX tonnes in 2012 to XXX tonnes in 2014; however, it decreased to XXX tonnes in 2015 because of the decreasing demand for glyphosate beyond China caused by the decreasing planting area of GM crops in 2015. It increased to XXX tonnes in 2016 and 2017 because of the recovering global demand for glyphosate.

Glyphosate production adopting the AEA pathway remains dominant in China, with its output reaching XXX tonnes and taking up XX % of national total in 2017.

In the past few years, the domestic production of glyphosate technical tended to transfer from East China to Central China (Hubei) and Southwest China (Sichuan), and North China (Inner Mongolia). The output of glyphosate technical in Sichuan, Hubei, and Inner Mongolia increased from about XXX tonnes in 2009 to about XXX tonnes in 2011, about XXX tonnes in 2012, about XXX tonnes in 2015 and about XXX tonnes in 2017.

The number of glyphosate technical producers in China (both active and idle are included) declined from over XX in 2012–2014 to only XX in 2015, only XX in 2016 and only XX in 2017, caused by the low price and then low profit of glyphosate technical in 2015–2016 and stricter environmental protection requirements.

Chinese glyphosate industry is dominated by the companies who own the latest technology, large-scale production capacity, strong financial and sales strength and complete industrial chain, etc. Leading producers of glyphosate technical in the country include Fuhua Tongda (XXX t/a), Hubei Trisun (XXX t/a), Zhejiang Wynca (XXX t/a), Nantong Jiangshan (XXX t/a), Jiangsu Weien (XXX t/a), Leshan Hebang (XXX t/a glyphosate technical, XXX t/a PMIDA), Jiangsu Yangnong (XXX t/a) and etc.

- Export



Glyphosate is the largest export commodity in the pesticide sector in China in terms of both volume and value. China's glyphosate industry highly depends on overseas market, with about XX % of its output exported every year. Besides, China has become the largest exporter of glyphosate in the world, and the export volume (glyphosate technical and formulations included and converted to 95% technical) has reached over XXX tonnes in 2017.

China's glyphosate export value increased from over USDXX billion in 2012 to over USDXX billion in 2013, driven by both increasing export volume and export price. The export value decreased a little to USDXX billion in 2014 because of the declining export price though the export volume increased, and it decreased sharply to USDXX billion in 2015 attributing to decreasing export volume and export price. The export value decreased to USDXX billion in 2016 because of the decreasing export price, though the export volume increased. The export value increased to USDXX billion in 2017 due to increasing demands for the glyphosate from GM crops.

The major export destinations of Chinese glyphosate technical are Argentina, the US, Brazil, Malaysia, Indonesia, Australia, and Russia, and the major destinations of glyphosate formulations are Thailand, Australia, Vietnam, the US, Ghana, Nigeria, Russia, Brazil, Uruguay, the Philippines, Japan, Mexico, Indonesia, Ukraine, Columbia, Chile, etc.

- Demand

Glyphosate has taken an irreplaceable position for the control of weeds in China. Its consumption grown at a CAGR of XX% in 2013–2017, much higher than that of the total herbicide consumption (about XX%) during the same period, reaching about XXX tonnes (converted to 95% technical) in 2017, accounting for XX% of the total herbicide consumption in China (converted to the most frequently used technical of each herbicide).

In China, glyphosate is quite important for the weeding in orchard, vegetables, wasteland reclamation and traditional crop fields in the period of pre-seeding. Orchard is the largest consumption field of glyphosate, with a demand share of about XX% in 2017, followed by vegetables, corn, rice, wheat, tea, rubber, etc.

- Production technology

There are two pathways for glyphosate production in China including the iminodiacetic acid (IDA) pathway and the aminoethanoic acid (AEA) pathway. According to the starting raw material, the former can also be subdivided into two routes, namely the diethanolamine (DEA) route and the iminodiacetonitrile (IDAN) route.

The IDA pathway had been developing rapidly in 2005–2009, and many domestic companies set up glyphosate technical production lines adopting the IDA pathway, especially the IDAN route. After that, the DEA route showed a downtrend with the number of producers decreasing



from XX in 2009 to only XX in 2014–2017 because of the strong competitiveness of the IDAN route stemming from its advantages such as low cost, sufficient IDAN supply, etc.

Because of the mature technology and the sufficient raw material supply in China, the AEA pathway is widely adopted in China's glyphosate industry. In 2017, the capacity of glyphosate technical by this pathway was about XXX t/a, accounting for XX% of China's total capacity.

Generally, the glyphosate production technologies of all these three routes are mature, with only small innovations on increasing the unit output. However, under the pressure of stricter environmental protection policies like the environmental protection verification launched by the Chinese government, the glyphosate producers began to focus on the innovation on waste treatment technology. Among the waste treatment technologies, the burning method is the rising one because of its high comprehensive utilization rate of phosphorus element.

Along with producers' increasing input on waste treatment, the production cost of glyphosate also increases in China. Though the cost of the AEA pathway is more affected by the environmental protection policies, it still has a similar cost with the one of the IDAN route and has cost advantage over the DEA route for its high production efficiency, complete industrial layout and high value of by-products.

- Price

Glyphosate price in China fluctuated during the past few years.

The annual average ex-works price of 95% glyphosate technical increased from USDXXX/t in 2012 to USDXXX/t in 2013, because of the sharply increasing export volume of China's glyphosate (increasing demand beyond China) and China's environmental protection verification (EPV) on glyphosate (PMIDA) producers.

However, it decreased to USDXXX/t in 2014 and USDXXX/t in 2015, because of the falling export volume as a result of a decreasing demand beyond China and decreasing planting area of genetically modified (GM) crops in 2015.

It decreased to USDXXX/t in 2016, because of the oversupply of glyphosate technical.

It recovered to USDXXX/t in 2017 for increasing cost of raw materials. For the same reason, it increased to an average USDXXX/t in Jan. 2018–Oct. 2018.

4. What's in this report?

Note: Key data/information in this sample page is hidden, while in the report it is not.

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Table 2.1.1-1 Raw material consumption and unit cost of chloroacetic acid ammonolysis process for glycine production in China, Oct. 2018

No.	Raw material	Purity, %	Unit consumption, t/t	Price, USD/t	Unit cost, USD/t
1	Chloroacetic acid	95	XXX	XXX	XXX
2	Liquid ammonia	99.6	XXX	XXX	XXX
3	Urotropine	98	XXX	XXX	XXX
4	Methanol	98	XXX	XXX	XXX
Total		/	/	/	XXX

Source: CCM

Table 2.1.1-2 Capacity and output of glycine in China, 2013–2017

Year	Capacity, t/a		Output, tonne	
	Industrial grade	Other grade	Industrial grade	Other grade
2013	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX
2016	XXX	XXX	XXX	XXX
2017	XXX	XXX	XXX	XXX

Source: CCM

Table 2.1.1-3 Producers of industrial grade glycine in China, 2013–2017

No.	Company	Abbreviation	Capacity H1 2018, t/a	Output, tonne				
				2013	2014	2015	2016	2017
1	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
...	...	...	XXX	XXX	XXX	XXX	XXX	XXX
Total			XXX	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 2.1.1-4 Consumption of glycine in glyphosate production in China, 2013–2017

Year	2013	2014	2015	2016	2017
Output of glyphosate tech. (AEA pathway), tonne	XXX	XXX	XXX	XXX	XXX
Consumption of glycine, tonne	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 3.1-1 Registrations of glyphosate in China, as of March 2012, Oct. 2016, Aug. 2017 and Oct. 2018

Specification		Number of registration			
		March 2012	Oct. 2016	Aug. 2017	Oct. 2018
Single formulations	SL	XXX	XXX	XXX	XXX
	SP	XXX	XXX	XXX	XXX
	SG/WSG	XXX	XXX	XXX	XXX
Mixed formulations		XXX	XXX	XXX	XXX
Technical		XXX	XXX	XXX	XXX
Total		XXX	XXX	XXX	XXX

Source: Institute for the Control of Agrochemicals, Ministry of Agriculture (ICAMA) & CCM

Table 3.2.1-1 Output of China's glyphosate and share in global market, 2013–2017

Year	Output of glyphosate tech., tonne			China's PMIDA export, tonne	China's total*, tonne	China's share
	Global	China	China's share			
2013	XXX	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX	XXX
2016	XXX	XXX	XXX	XXX	XXX	XXX
2017	XXX	XXX	XXX	XXX	XXX	XXX

Note: * PMIDA (converted to glyphosate tech.) is included.

Source: CCM

Figure 3.2.2-1 Capacity and output of glyphosate technical in China, 2008–2017



Source: CCM

Table 3.2.3-2 Capacity and output of glyphosate technical by producer in China, 2013–H1 2018

No.	Enterprise	Capacity, as of H1 2017, t/a	Output, tonne					
			2012	2013	2014	2015	2016	H1 2017
1	Hubei Trisun	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Others			XXX	XXX	XXX	XXX	XXX	XXX
Total			XXX	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 3.2.5-1 Capacity of glyphosate technical in China by production route, 2007–2017

Year/pathway			2007	2008	.....	2016	2017
AEA		Capacity, t/a	XXX	XXX	XXX	XXX	XXX
		Number of producers	XXX	XXX	XXX	XXX	XXX
IDA	DEA route	Capacity, t/a	XXX	XXX	XXX	XXX	XXX
		Number of producers	XXX	XXX	XXX	XXX	XXX
	IDAN route	Capacity, t/a	XXX	XXX	XXX	XXX	XXX
		Number of producers	XXX	XXX	XXX	XXX	XXX
	PMIDA route	Capacity, t/a	XXX	XXX	XXX	XXX	XXX
		Number of producers	XXX	XXX	XXX	XXX	XXX
Total		Capacity, t/a	XXX	XXX	XXX	XXX	XXX
		Number of producers	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 3.2.5-2 Output of glyphosate technical in China by production route, 2007–2017

Year/pathway		2007	2008	.....	2015	2016	2017
AEA		Output, tonne	XXX	XXX	XXX	XXX	XXX
		Growth rate	XXX	XXX	XXX	XXX	XXX
		Operation rate	XXX	XXX	XXX	XXX	XXX
IDA	DEA route	Output, tonne	XXX	XXX	XXX	XXX	XXX
		Growth rate	XXX	XXX	XXX	XXX	XXX
		Operation rate	XXX	XXX	XXX	XXX	XXX
	IDAN route	Output, tonne	XXX	XXX	XXX	XXX	XXX
		Growth rate	XXX	XXX	XXX	XXX	XXX
		Operation rate	XXX	XXX	XXX	XXX	XXX
Total		Output, tonne	XXX	XXX	XXX	XXX	XXX
		Growth rate	XXX	XXX	XXX	XXX	XXX
		Operation rate	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 3.3.1-2 Output of key glyphosate formulations in China, 2013–H1 2018, tonne

Year	30% SL (41% IPA mainly)	51% SL (51% IPA)	62% SL (62% IPA)	68% SG (75.7% WSG)	Others
2013	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX
2016	XXX	XXX	XXX	XXX	XXX
2017	XXX	XXX	XXX	XXX	XXX
H1 2018	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 4.1.3-1 Major overseas buyers of China's PMIDA, 2017, tonne

No.	Buyer	Argentina	India	The US	Others
1	XXXXXXXXXXXX	XXX	XXX	XXX	XXX
2	XXXXXXXXXXXX	XXX	XXX	XXX	XXX
3	XXXXXXXXXXXX	XXX	XXX	XXX	XXX
...	XXXXXXXXXXXX	XXX	XXX	XXX	XXX
...	XXXXXXXXXXXX	XXX	XXX	XXX	XXX
Others		XXX	XXX	XXX	XXX
Total		XXX	XXX	XXX	XXX

Source: China Customs & CCM

Table 4.1.3-12 China's exports of glyphosate by destination, Aug 2018

No.	Destination	41% IPA		51% IPA		62% IPA		75.7% WSG		Tech.		Total value, USD
		Volume, tonne	Price, USD/kg	Volume, tonne	Price, USD/kg	Volume, tonne	Price, USD/kg	Volume, tonne	Price, USD/kg	Volume, tonne	Price, USD/kg	
1	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
....	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
30	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Others		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Total		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Source: China Customs & CCM

Table 5.2.3.1-1 Consumption of glyphosate formulations in China, 2013–2017

Year	Consumption volume, tonne			Market share		
	30% SL	62% IPA	Others	30% SL	62% IPA	Others
2012	XXX	XXX	XXX	XXX	XXX	XXX
2013	XXX	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX	XXX
2016	XXX	XXX	XXX	XXX	XXX	XXX
H1 2017	XXX	XXX	XXX	XXX	XXX	XXX

Source: CCM

Table 5.2.3.2-2 Consumption of glyphosate (calculated by 95% technical) in China by crop, 2013–2017, tonne

Crop	2012	2013	2014	2015	2016
XXXX	XXX	XXX	XXX	XXX	XXX
Beans	XXX	XXX	XXX	XXX	XXX
Cotton	XXX	XXX	XXX	XXX	XXX
...	XXX	XXX	XXX	XXX	XXX
Total	XXX	XXX	XXX	XXX	XXX

Table 6.1.3-1 Raw material cost of AEA pathway for glyphosate technical production in China, Oct. 2018

Raw material	Unit consumption, t/t	Unit price*, USD/t	Unit cost, USD/t
Glycine (Industrial grade)	XXX	XXX	XXX
Paraformaldehyde (37%)	XXX	XXX	XXX
Triethylamine (99.5%)	XXX	XXX	XXX
Methanol (95%)	XXX	XXX	XXX
DMP	XXX	XXX	XXX
Hydrochloric acid (30%)	XXX	XXX	XXX
Total			XXX

Source: CCM

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