Outlook for China Glyphosate Market 2016-2020

The Eighth Edition

Jan. 2017

CCM Data & Business Intelligence

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1. Introduction

Outlook for China Glyphosate Market 2016-2020 is a preliminary report on China's glyphosate market finished by CCM in Jan. 2017. 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, 2011-2015
- Price of glyphosate technical and future trend;
- Production technology & technology level of glyphosate technical in China
- Breakdown of glyphosate consumption by crop in China, 2011-2015

2. Approach for the report

This report has been drafted by diverse methods which are 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. A lot of work went into compiling and analyzing the information obtained. Where necessary, checks were made with the Chinese suppliers regarding market information such as production, demand, use, competition, etc.

✓ **Telephone interview**

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.

For directly analyzing 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.

✓ **Site visit**

CCM has conducted site visits and carried out in-depth interviews with some major glyphosate producers such as Fuhua Tongda and Zhejiang Wynca, in order to verify the data of production, market, sales and technology to figure out the glyphosate supply/demand situation in China. Through site visits, more accurate information was obtained to enhance the understanding of the glyphosate industry.

✓ **Import & export analysis**

Analysis of export data (HS code 29310000, 29319019, 29319011, 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.

✓ **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

The sales of herbicides have grown fast in the world in the past few years mainly thanks to the boom in planting of biofuel crops, especially corn grown as an input for ethanol. The global corn planting area increased from XX million hectares in 2002 to XX million hectares in 2015. Many of the latter crops are genetically modified to make them "Roundup ready", which enables herbicides to kill surrounding grasses and weeds without damaging the core crops.

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 more than 30% of the global herbicide market in terms of sales volume.

- Position of Chinese glyphosate in the world

After nearly 30 years' development, 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.

The output of glyphosate technical in China was about XX tonnes in 2015, XX% of which was exported to more than XX countries and regions worldwide.

- Production

Stimulated by increasing global demand for glyphosate, the domestic output of glyphosate technical kept increasing from XX tonnes in 2011 to XX tonnes in 2014. However, it decreased to XX tonnes in 2015 because of the decreasing demand for glyphosate beyond China caused by the decreasing planting area of GM crops in 2015.

Glyphosate production adopting the AEA pathway remains dominant in China, with its output reaching XX tonnes and taking up XX% of national total in 2015.

In the past few years, the domestic production of glyphosate technical trended to transfer from East China to Central China (Hubei, Jiangxi, Anhui, etc.) and Southwest China (Sichuan), and Northwest China (Inner Mongolia). The output of glyphosate technical in Sichuan, Hubei, Jiangxi, Anhui, and Inner Mongolia has kept increasing from about XX tonnes in 2011 to over XX tonnes in 2014-2015.

There are only XX producers of glyphosate technical (both active and idle are included) in China as of Dec. 2016, decreasing from over XX in 2011-2015, caused by the low price and then low profit of glyphosate technical in 2015 and H1 2016.

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 Hubei Trisun (XX

t/a), Fuhua Tongda (XX t/a), Zhejiang Wynca (XX t/a), Nantong Jiangshan (XX t/a), Jiangsu Weien (XX t/a), Jiangsu Yangnong (XX t/a), Shandong Rainbow (XX t/a), 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 over 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 XX tonnes in 2015, satisfying over XX% of the global demand.

China's glyphosate export value kept increasing from over USDXX billion in 2011 to over USDXX billion in 2012 and 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 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 has grown at a CAGR of XX% in 2011-2015, higher than that of the total herbicide consumption (about XX%) during the same period, reaching about XX tonnes (converted to 95% technical) in 2015, 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 2015, 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 has been developing rapidly in 2005-2009, and many domestic companies

set up glyphosate technical production lines of IDA pathway especially IDAN route. After that, the DEA route showed a downtrend with the number of producers kept decreasing from XX in 2009 to only XX in 2014-2015 because of the strong competitiveness of IDAN route (low cost, sufficient IDAN supply, etc.).

Because of the mature technology, plus the sufficient raw material supply in China, the AEA pathway is widely adopted in China's glyphosate industry. In 2015, the capacity of glyphosate technical by this pathway was about XX 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 AEA pathway is more affected by the environmental protection policies, it still has a similar cost with the one of IDAN route and has cost advantage over DEA route for its high production efficiency, complete industrial layout and high value of byproducts.

- Price

Glyphosate price in China fluctuated in 2011-2016.

The annual average ex-works price of glyphosate technical increased from USDXX/t in 2011 to USDXX/t in 2012 and USDXX/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 USDXX/t in 2014 and USDXX/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.

The price decreased to USDXX/t in 2016, because of the oversupply of glyphosate technical.

4. What's in this report?

Table 2.1.1-1 Raw material consumption and unit cost of chloroacetic acid ammonolysis process for glycine production in China, Dec. 2015

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, 2011-2015

Year	Capacity, t/a		Output, tonne	
	Industrial grade	Other grade	Industrial grade	Other grade
2011	XXX	XXX	XXX	XXX
2012	XXX	XXX	XXX	XXX
2013	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX

Source: CCM

Table 2.1.1-3 Producers of industrial grade glycine in China, 2011-2015

No.	Company	Abbreviation	Capacity 2016, t/a	Output, tonne				
				2011	2012	2013	2014	2015
1	XXXXXXXXXX	XXXX	XXX	XXX	XXX	XXX	XXX	XXX
2	XXXXXXXXXX	XXXX	XXX	XXX	XXX	XXX	XXX	XXX
3	XXXXXXXXXX	XXXX	XXX	XXX	XXX	XXX	XXX	XXX
…	XXXXXXXXXX	XXXX	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, 2011-2015

Year	2011	2012	2013	2014	2015
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 and Oct. 2016

Specification		Number of registration	
		Mar. 2012	Oct. 2016
Single formulations	SL	XXX	XXX
	SP	XXX	XXX
	SG/WSG	XXX	XXX
Mixed formulations		XXX	XXX
Technical		XXX	XXX
Total		XXX	XXX

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

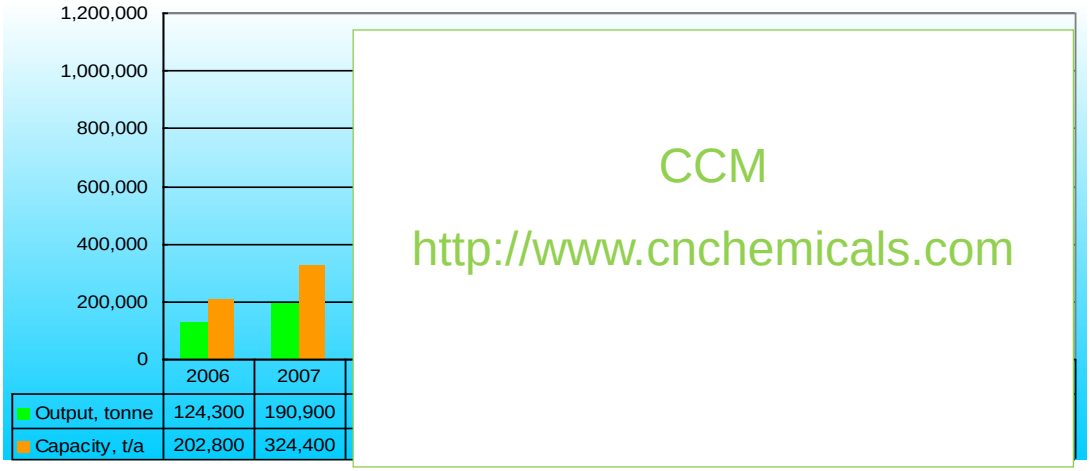
Table 3.2.1-1 Output of China's glyphosate and share in global market, 2011-2015

Year	Output of glyphosate tech., tonne			China's PMIDA export, tonne	China's total*, tonne	China's share
	Global	China	China's share			
2011	XXX	XXX	XXX	XXX	XXX	XXX
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

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

Source: CCM

Figure 3.2.2-1 Capacity and output of glyphosate technical in China, 2006-2015



Source: CCM

Table 3.2.3-2 Capacity and output of glyphosate technical by producer in China, 2011-H1 2016

No.	Enterprise	Capacity, t/a						Output, tonne					
		2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	H1 2016
1	Hubei Trisun	XXX	70,000	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	XXXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Others		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Total		**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**

Source: CCM

Table 3.2.5-1 Capacity of glyphosate technical in China by production route, 2006-2016

Year/pathway			2006	2007	……	2015	2016
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, 2006-2015

Year/pathway			2006	2007	……	2014	2015
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, 2011-H1 2016, tonne

Year	30% SL (41% IPA mainly)	51% SL (51% IPA)	62% SL (62% IPA)	68% SG (75.7% WSG)	Others
2011	XXX	XXX	XXX	XXX	XXX
2012	XXX	XXX	XXX	XXX	XXX
2013	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX
H1 2016	XXX	XXX	XXX	XXX	XXX

Note: Quite a number of 10%SL, which has been banned since Jan. 2012, is consumed in China in 2011.

Source: CCM

Table 4.1.3-1 Major overseas buyers of China's PMIDA, 2015, tonne

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

Source: China Customs & CCM

Table 4.1.3-10 China's exports of glyphosate by destination, H1 2016

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, 2011-2015

Year	Consumption volume, tonne			Market share		
	30% SL	62% IPA	Others	30% SL	62% IPA	Others
2011	XXX	XXX	XXX	XXX	XXX	XXX
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
H1 2016	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, 2011-2015, tonne

Crop	2011	2012	2013	2014	2015
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, June 2016

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

If you want more information, please feel free to contact us

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