

Pesticide Price Analysis in China in 2023

The Ninth Edition

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Executive Summary

In 2023, China's most pesticides showed a step-down price, as triggered by overdraft of overseas demand, geopolitical turbulence, changes in exchange rate, etc. 106 Products (=99.07% of the total) out of the 107 pesticide AI monitored by CCM registered YoY decreases in average price. With overseas demand recovery, pesticide technical price is expected to resume to a rational level in H1 2024 and slightly rise in H2.

In 2019–2023, CAPI for 2021 and 2022 marked year-on-year growths while that for the other years went opposite, with herbicides experiencing largest YoY change in the index as a whole.

In this report, CCM selected major pesticide AI (technical products) from the monitoring data of 107 pesticide AI to study their ex-works price trend in H2 2023, with forecasts on the supply, demand and price in H1 2024 included.

Methodology

This report is concerning price analysis of pesticides in China in 2023. It 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. A lot of work has gone into the compilation and analysis of the obtained information. When necessary, checks have been made with Chinese agrochemical players.

- 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:

- China Crop Protection Industry Association
- CCM's database
- 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.

Table 0-1 USD/CNY exchange rate, Jan. 2017–Dec. 2023

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
2017	6.8918	6.8713	6.8932	6.8845	6.8827	6.8019	6.7772	6.7148	6.5909	6.6493	6.6300	6.6067	6.7662
2018	6.5079	6.3045	6.3352	6.2764	6.3670	6.4078	6.6157	6.8293	6.8347	6.8957	6.9670	6.9431	6.6070
2019	6.8482	6.7081	6.6957	6.7193	6.7344	6.8896	6.8716	6.8938	7.0883	7.0726	7.0437	7.0262	6.8826
2020	6.9614	6.9249	6.9811	7.0771	7.0690	7.1315	7.0710	6.9980	6.8498	6.7796	6.7050	6.5921	6.9284
2021	6.5408	6.4623	6.4754	6.5584	6.4895	6.3572	6.4709	6.4660	6.4680	6.4604	6.4192	6.3693	6.4615
2022	6.3794	6.3580	6.3014	6.3509	6.5672	6.6651	6.6863	6.7467	6.8821	7.0992	7.2081	7.1225	6.6972
2023	6.9475	6.7492	6.9400	6.8805	6.9054	7.0965	7.2157	7.1283	7.1788	7.1789	7.1778	7.1104	7.0424

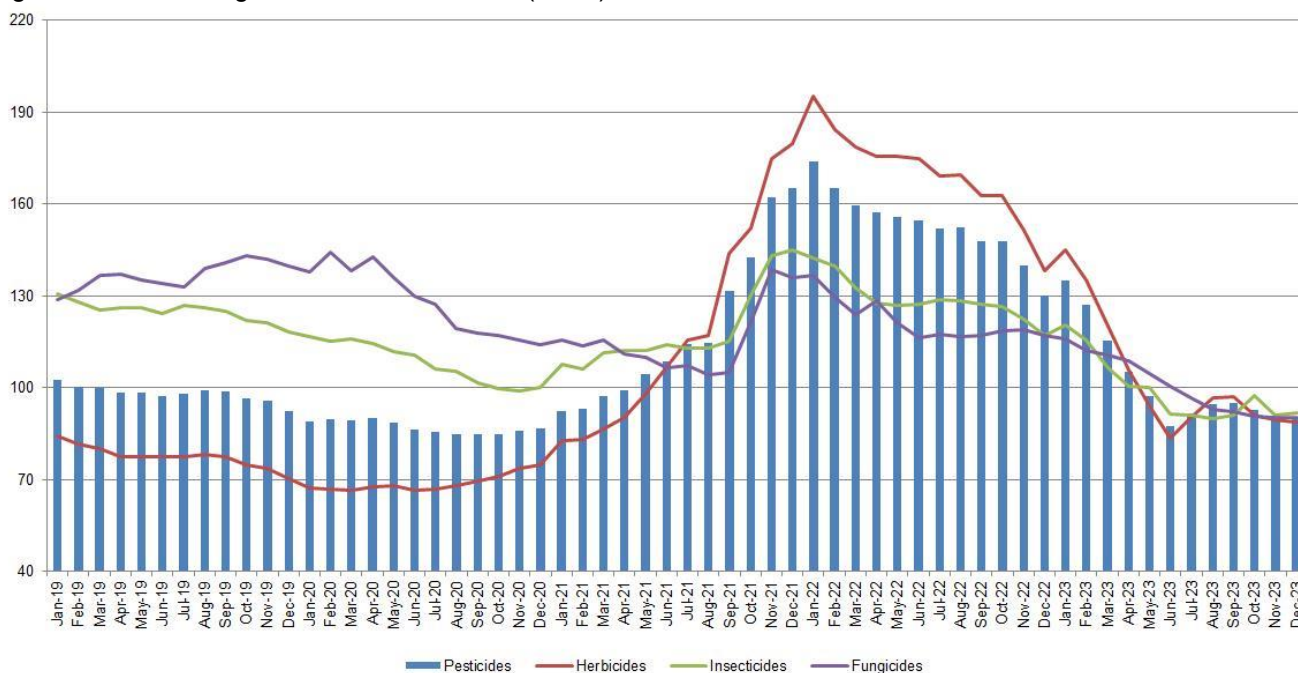
Source: The People's Bank of China

1 Overview of China's pesticide AI prices

1.1 Review of China's pesticide price from 2019–2023

In 2019–2023, the China Agrochemical Price Index (CAPI) marked yearly growths in 2021 and 2022 while declines in the other three years. Thereinto, herbicides registered the largest YoY change in the index overall among the three main pesticide categories (herbicides, insecticides and fungicides).

Figure 1.1-1 China Agrochemical Price Index (CAPI), 2019–2023



Source: China Crop Protection Industry Association (CCPIA)

In 2019: CAPI in Jan.–Dec. averaged at 98.09, down by 5.01% YoY. By category, only the fungicide index (=136.78) enjoyed YoY growth with the largest change, up by 13.14% YoY; the CAPI of insecticides (125.02) edged down 1.06% YoY, and that of herbicides (=77.50) dropped 12.90% YoY.

In 2020: The general CAPI diminished 11.11% YoY to 87.20 for the year, in which the insecticide CAPI (=108.06) witnessed the largest decline margin at 13.57% YoY, and that of herbicides (=68.84) and fungicides (=128.35) fell year on year by 11.17% and 6.16% respectively. Notably, in H2, the half-year price index of herbicides grew 5.13% compared with that in H1 due to hiking prices of glyphosate, glufosinate-ammonium and amide herbicides.

In 2021: Before Q2, affected by the outbreak of COVID-19, the concerns over unstable supply from production, logistics and other factors were hoarding; and the panic deepened in Q4, when "Dual Control" policy carried out from Sept. to Dec. Most chemical products surged in ex-works price, with CAPI of all pesticides ticking up 36.18% YoY to 118.75. The highest point of herbicide CAPI appeared in Dec, (=179.75), up by 140.89% YoY and renewing the historic high; the annual insecticide CAPI soared 44.77% YoY and the fungicide one went up by 19.22% YoY.

In 2022: With the controls on energy consumption and intensity eased in the beginning of the year, CAPI of pesticide technicals among other chemical products continued to drop in the year; and in Dec., CAPI of all pesticide categories restored to the level before the "Dual Control" in Sept. 2021. The annual CAPI of herbicides (=169.79) lifted 42.37% YoY, albeit at a slower pace, still higher than that in the past five years, up 119.09% from 2019; CAPI of insecticides and fungicides of the year rose 8.74% YoY and 5.55% YoY, respectively.

In 2023: The CAPI of pesticides and three categories sustained the 2022 downtrend. Most of the products represented significant price drops, such as nicotinamide and pyrethroid insecticides that hit the largest decreasing rates in recent five years. What's more, new products subject to all categories, including prothioconazole technical, chlorantraniliprole technical and glufosinate-p technical, have constantly seen quotations lowered by some enterprises for yearend realisation.

Table 1.1-1 Annual China Agricultural Price Index (CAPI), 2019–2023

Year	Pesticides	YoY	Herbicides	YoY	Insecticides	YoY	Fungicides	YoY
2019	98.09	-5.01%	77.50	-12.90%	125.02	-1.06%	136.78	13.14%
2020	87.20	-11.11%	68.84	-11.17%	108.06	-13.57%	128.35	-6.16%
2021	118.75	36.18%	119.26	73.24%	118.61	9.77%	115.40	-10.09%
2022	153.06	28.89%	169.79	42.37%	128.98	8.74%	121.81	5.55%
2023	101.85	-33.46%	103.07	-39.30%	98.91	-23.31%	100.47	-17.52%

Source: CCPIA

1.2 Price trend of China's pesticides in 2023

In 2023, China's pesticide prices tiered down from the high position in late 2021 and slipped further beyond the public expectations. In domestics, large capacity increase tipped the balance of supply and demand, accompanied by a market downturn, leading to an inventory loss. Besides, the cut-throat competition in end market drew a strong wait-and-see mood. On the overseas side, factors such as demand overdraft, geopolitical crisis and changes in exchange rates gave rise to settling risks, extending the de-stocking cycle. Although Chinese pesticide enterprises have reduced or limited the production, inventory pressure remained high under sluggish consumption.

Notably, glyphosate technical, one of the important pesticide varieties, experienced a rise-and-fall trajectory in price during H2 2023. That's because the frequent high-temperature overhauls in July–Aug., the traditional offseason, plus conventional equipment maintenance in between, had cut glyphosate technical output in Q3, leading to a slight price rebound, which drove up the herbicide and the overall pesticide price indices temporarily. However, the price uptick didn't last long as a result of soft demand and oversupply overseas, and rolled back in Q4, so did CAPI of herbicides and pesticides.

According to China Crop Protection Industry Association (CCPIA), the CAPI saw a plunge by 48.29% from Jan. 2022 to Dec. 2023. By category, the CAPI of herbicides rolled down to 88.74 in Dec., 2023, slumping by 54.54% from 195.20 in Jan. 2022, a decline wildly steeper than that of insecticides (35.55%) and fungicides (33.95%), the CAPI of which registered 91.88 and 90.21 respectively, the history lowest figures in the past five years as well.

Table 1.2-1 China Agricultural Price Index (CAPI), Jan.–Dec. 2023

Month	Pesticides	Herbicides	Insecticides	Fungicides
Jan. 2023	135.16	145.04	120.67	116.03
Feb. 2023	126.91	135.08	115.49	111.99
March 2023	115.53	120.03	106.41	110.55
April 2023	105.11	105.78	100.47	108.89
May 2023	97.33	94.00	100.22	104.67
June 2023	87.55	83.43	91.57	100.45
July 2023	91.59	90.22	91.19	96.61
Aug. 2023	94.72	96.80	89.73	93.07
Sept. 2023	95.11	97.11	90.99	92.15
Oct. 2023	92.81	90.88	97.36	90.71
Nov. 2023	90.35	89.68	90.96	90.31
Dec. 2023	90.01	88.74	91.88	90.21

Source: China Crop Protection Industry Association (CCPIA)

1.3 Ranking of major pesticide AI by YoY change

According to CCM's monitoring of 107 pesticide AI (technical products), more than 99% (=106) of them suffered YoY decreases in ex-works price and only one (=0.93%) saw price uptick in 2023, with an average price down by 23.36% YoY (based on RMB, the same hereinafter) from USD4,290.77/t to USD3,127.07/t. Thereinto,

- Herbicide AI (=37): The average price was USD2,331.22/t, down by 27.52% YoY from USD3,382.28/t; top five AI ranked by YoY decrease were: glufosinate ammonium, glyphosate, clethodim, diquat (TK) and haloxyfop-P-methyl;
- Insecticide AI (=31): Their prices averaged at USD3,201.71/t, down by 26.97% YoY compared with USD4,609.93/t in 2022; five varieties with the sharpest declines were: chlorfenapyr, bifenthrin, imidacloprid and emamectin benzoate;
- Fungicide AI (=36): The average price decreased 296.96% YoY to USD3,601.98/t, compared to USD4,675.27/t in 2022; five products came top regarding decreasing rate were: hymexazol, tebuconazole, propiconazole, azoxystrobin and dimethomorph;
- Acaricide AI (spirodiclofen, hexythiazox and pyridaben): They registered an average price of USD6,472.55/t, down by 10.25% YoY from USD7,583.55/t in 2022.

In addition, CCM also followed the data of 13 key pesticide intermediate products, the average price of which marked 32.94% of yearly decrease to USD493.39/t in 2023 (vs USD773.69/t in 2022), and those with the steepest decreasing margin were:

- Ethylenediamine: intermediate of fungicide amobam, zineb and mancozeb and raw material of insecticide imidacloprid;
- N-(Carboxymethyl)-N-(phosphonomethyl)-glycine and glycine: intermediates of glyphosate;
- 2-Chloro-5-chloromethylpyridine: intermediate of imidacloprid and acetamiprid;
- Phosphorus trichloride: intermediates of N-(carboxymethyl)-N-(phosphonomethyl)-glycine, glyphosate, phoxim, chlorpyrifos, acephate, etc.

Table 1.3-1 Ranking of major herbicide AI by YoY decrease in China, 2023

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
1	Glufosinate ammonium	1,744.76	5,162.98	-66.21%	-64.46%
2	Glyphosate	672.17	1,424.77	-52.82%	-50.39%
3	Clethodim	1,845.34	3,844.29	-52.00%	-49.52%
4	Diquat TK	650.12	1,287.77	-49.52%	-46.91%
5	Haloxyfop-P-methyl	2,958.76	5,232.38	-43.45%	-40.54%
6	Butachlor	469.61	816.26	-42.47%	-39.50%
7	Bispyribac-sodium	5,212.52	8,934.80	-41.66%	-38.65%
8	Nicosulfuron	3,943.52	6,542.26	-39.72%	-36.62%
9	Tribenuron-methyl	2,103.36	3,443.39	-38.92%	-35.77%
10	Oxyfluorfen	3,271.88	5,315.05	-38.44%	-35.27%
11	2,4-Dichlorophenoxyacetic acid/2,4-D	337.82	546.47	-38.18%	-35.00%
12	Fluroxypyr	2,523.18	4,048.42	-37.67%	-34.46%
13	Acetochlor	625.92	975.47	-35.83%	-32.53%
14	Cyhalofop-butyl	2,823.42	4,396.76	-35.78%	-32.47%
15	Fenclorim	2,252.03	3,464.85	-35.00%	-31.65%
16	Pretilachlor	662.61	1,010.36	-34.42%	-31.04%
17	Bentazone	1,828.54	2,739.80	-33.26%	-29.82%
18	Oxadiazon	4,107.60	6,029.03	-31.87%	-28.36%
19	Pyrazosulfuron-ethyl	4,707.16	6,629.10	-28.99%	-25.33%
20	Mesotrione	2,231.62	3,107.86	-28.19%	-24.49%
21	Bensulfuron-methyl	3,386.93	4,604.14	-26.44%	-22.65%
22	MCPA	793.91	1,057.93	-24.96%	-21.09%
23	Clodinafop-propargyl	4,243.21	5,505.63	-22.93%	-18.96%
24	Clomazone	2,058.59	2,628.95	-21.70%	-17.66%
25	Dicamba	1,398.96	1,786.51	-21.69%	-17.66%
26	Diuron	833.52	1,062.18	-21.53%	-17.48%

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
27	Quizalofop-P-ethyl	4,056.62	5,130.65	-20.93%	-16.86%
28	Atrazine	685.72	851.47	-19.47%	-15.32%
29	Metolachlor	983.31	1,185.64	-17.07%	-12.79%
30	Florasulam	9,627.10	11,594.02	-16.96%	-12.69%
31	Ametryn	892.73	1,049.87	-14.97%	-10.59%
32	Fomesafen	2,721.44	3,151.39	-13.64%	-9.19%
33	Pendimethalin	1,230.59	1,415.32	-13.05%	-8.57%
34	Metsulfuron-methyl	2,723.18	3,016.20	-9.72%	-5.06%
35	Quinclorac	2,827.07	3,121.65	-9.44%	-4.77%
36	Triclopyr	1,998.06	2,177.08	-8.22%	-3.49%
37	Trifluralin	822.21	853.78	-3.70%	1.27%

Source: CCM

Table 1.3-2 Ranking of major insecticide AI by YoY decrease in China, 2023

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
1	Chlorfenapyr	3,519.46	6,900.62	-49.00%	-46.37%
2	Acetamiprid	1,824.82	3,504.36	-47.93%	-45.24%
3	Bifenthrin	3,642.66	6,515.84	-44.10%	-41.21%
4	Imidacloprid	2,019.84	3,602.64	-43.93%	-41.04%
5	Emamectin benzoate	8,008.63	13,646.09	-41.31%	-38.29%
6	Lambda-cyhalothrin	2,770.86	4,676.37	-40.75%	-37.69%
7	Abamectin	8,613.36	13,798.83	-37.58%	-34.36%
8	Deltamethrin	8,600.40	12,458.91	-30.97%	-27.41%
9	Pymetrozine	2,295.84	3,325.22	-30.96%	-27.40%
10	Cypermethrin	1,320.95	1,890.78	-30.14%	-26.54%
11	Beta-Cypermethrin	2,687.78	3,830.76	-29.84%	-26.22%
12	Chlorfluazuron	8,218.39	11,542.55	-28.80%	-25.13%
13	Chlorpyrifos	783.72	1,085.67	-27.81%	-24.09%

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
14	Fipronil	9,458.42	13,052.59	-27.54%	-23.80%
15	Acephate	954.42	1,312.90	-27.30%	-23.56%
16	Diafenthiuron	2,406.19	3,280.49	-26.65%	-22.87%
17	Cyromazine	2,671.39	3,563.01	-25.02%	-21.16%
18	Methomyl	1,504.08	1,899.21	-20.80%	-16.72%
19	Hexaflumuron	9,482.85	11,868.32	-20.10%	-15.98%
20	Carbofuran	2,082.81	2,569.36	-18.94%	-14.76%
21	Buprofezin	1,398.99	1,716.57	-18.50%	-14.30%
22	Phoxim	805.18	984.74	-18.23%	-14.02%
23	Profenofos	1,544.23	1,877.63	-17.76%	-13.52%
24	Pyriproxifen	3,098.88	3,546.48	-12.62%	-8.12%
25	Dimethoate	958.19	1,071.72	-10.59%	-5.99%
26	Omethoate	1,046.71	1,159.36	-9.72%	-5.06%
27	Methidathion	1,815.45	2,010.80	-9.72%	-5.06%
28	Malathion	751.64	821.70	-8.53%	-3.81%
29	Fenvalerate	2,838.63	3,097.38	-8.35%	-3.63%
30	Isoproc carb	917.81	996.51	-7.90%	-3.15%
31	Propargite	1,210.30	1,300.34	-6.92%	-2.13%

Source: CCM

Table 1.3-3 Ranking of major fungicide AI by YoY decrease in China, 2023

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
1	Hymexazol	1,937.03	3,359.21	-42.34%	-39.36%
2	Tebuconazole	1,066.18	1,835.71	-41.92%	-38.93%
3	Propiconazole	2,530.36	4,278.45	-40.86%	-37.81%
4	Azoxystrobin	3,933.80	6,623.94	-40.61%	-37.55%
5	Dimethomorph	1,270.52	2,074.36	-38.75%	-35.59%
6	Cymoxanil	1,646.48	2,664.05	-38.20%	-35.01%
7	Trifloxystrobin	7,208.36	11,321.36	-36.33%	-33.05%
8	Cyazofamid	10,823.49	16,932.71	-36.08%	-32.78%
9	Difenoconazole	2,578.95	4,027.89	-35.97%	-32.67%
10	Thiram	289.22	430.74	-32.86%	-29.39%
11	Prochloraz	1,072.21	1,544.86	-30.59%	-27.02%
12	Triadimefon	1,281.87	1,844.92	-30.52%	-26.94%
13	Paclobutrazol	1,321.85	1,898.26	-30.37%	-26.78%
14	Isoprothiolane	718.48	1,030.45	-30.27%	-26.68%
15	Hexaconazole	2,148.76	3,055.46	-29.67%	-26.05%
16	Pyrimethanil	1,122.38	1,484.64	-24.40%	-20.50%
17	Iprodione	3,956.86	5,177.81	-23.58%	-19.64%
18	Tricyclazole	1,210.32	1,577.79	-23.29%	-19.34%
19	Fenoxaprop-P-ethyl	3,263.91	4,203.94	-22.36%	-18.36%
20	Chlorothalonil	375.50	480.39	-21.84%	-17.81%
21	Diniconazole	6,471.39	8,219.15	-21.26%	-17.21%
22	Carbendazim	790.66	1,002.71	-21.15%	-17.08%
23	Thiophanate-methyl	820.96	1,040.19	-21.08%	-17.01%
24	Ethephon	618.78	772.76	-19.93%	-15.80%
25	Myclobutanil	2,912.33	3,572.33	-18.48%	-14.27%
26	Epoxiconazole	8,493.54	10,324.86	-17.74%	-13.50%

No.	Pesticide AI name	Annual Price, USD/t		YoY change	
		in 2023	in 2022	based on USD	based on RMB
27	Kresoxim-methyl	6,502.38	7,881.05	-17.49%	-13.24%
28	Metalaxyl	2,034.86	2,457.97	-17.21%	-12.95%
29	Mancozeb	498.16	588.09	-15.29%	-10.93%
30	Cyprodinil	4,052.14	4,775.25	-15.14%	-10.77%
31	Flusilazole	7,623.17	8,966.11	-14.98%	-10.60%
32	Propineb	700.40	819.59	-14.54%	-10.14%
33	Phosethyl Al	526.53	608.69	-13.50%	-9.04%
34	Azocyclotin	4,347.47	4,796.16	-9.36%	-4.68%
35	Propamocarb	1,247.33	1,368.37	-8.85%	-4.15%
36	Gibberellic acid	32,274.68	35,269.53	-8.49%	-3.77%

Source: CCM

2 Five main herbicide AI ranked by YoY change in China

2.1 Glufosinate-ammonium

Entering H2 2023, glufosinate-ammonium saw a glut; the average ex-works price of 95% glufosinate-ammonium technical in H2 was USD8,900/t, down by 41.07% compared with that in H1.

The July–Sept. prices of this product kept going down, registering YoY decreases above 72.50% each month; in Q4, even though the downstream demand remained weak, the price was stable in Oct. and began to rebound since Nov., thanks to the producers' efforts to lift the quotations, as the previous price was close to the cost. According to CCM's monitoring data, the ex-works price of 95% glufosinate-ammonium technical reached USD9,592/t in Dec. 2023, up 7.71% MoM or down by 62.32% YoY (from USD25,455/t in Dec. 2022). However, such an uptrend would not last for there is little sign of improvement in market demand.

Forecasts on supply, demand and price in H1 2024

- Supply: The market faces excessive supply and fierce price competition, and is expected to see more capacities put into operation in the near future.
- Demand: In late 2023 and early 2024, the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) has announced the issuance of production and operation licenses for genetically modified (GM) varieties for corn and soybean, marking that China has officially moved towards the commercialisation of GM feed crops and food crops, as well as the increasing demand of GM herbicides.
- Price: Generally, the price of glufosinate-ammonium technical is estimated to stabilise or slip, below USD10,000/t in H1 2024.

Figure 2.1-1 Ex-works prices of 95% glufosinate-ammonium technical in China, Jan.–Dec. 2023



Source: CCM

2.2 Glyphosate

In general, the ex-works price of 95% glyphosate technical witnessed a short-term recovery during H2 2023—the average price in Q3 was USD4,349/t, up by 9.88% QoQ, yet dipped to USD4,043/t in Q4; slight upward fluctuation is expected in H1 2024.

Entering Q3, as overseas stocks of glyphosate technical have been consumed mostly, overseas purchasers started to replenish in large quantities, and given the purchasing peak of glyphosate in South America arrived in July, the orders in Brazil and Argentina have seen a sharp rise. Meanwhile, the ex-works prices of yellow phosphorus, paraformaldehyde and glycine increased at different degrees since late July, and that of PMIDA plateaued from decline, which made glyphosate technical price rise further, approaching USD4,775/t in Aug., up 20.40% MoM yet down 48.20% YoY. However, the price gradually went downhill since the second half of Aug., due to the lack of strong demand support, and the transactions could only be made at a low price in the end.

In Nov.–Dec., the ex-works price of glyphosate technical fell further, since some glyphosate technical producers grabbed orders with low quotations. This led to a divergence in operating rates of glyphosate technical producers, pushing the ex-works price of glyphosate technical to a lower end. According to CCM's monitoring data, the price slipped to USD3,769/t in Dec., a fall of 45.49% YoY or 8.29% MoM.

Forecasts on supply, demand and price in H1 2024

- Supply: The capacity utilisation of glyphosate production will remain at low end;
- Demand: An overall demand recovery of glyphosate is expected as one of the most important GM herbicides;
- Price: The ex-works price of glyphosate technical is estimated to stabilise and then rise for the increasing demand.

Figure 2.2-1 Ex-works prices of 95% glyphosate technical in China, Jan.–Dec. 2023



Source: CCM

2.3 Clethodim

In H2 2023, the average price of clethodim technical slumped by 37.06% on a half-year basis, compared with the 56.44% half-year plunge in H1. In H1 2024, the price is estimated to stabilise with high possibility of rebound.

In Q3, due to excessive supply on the market, clethodim producers mainly retained normal operation of its intermediate propionyl trione; in demand-wise, clethodim technical witnessed weak export, lacklustre inquiries and quotations for foreign trade, and sporadic new orders in progress, with slipping quotations in July. In Aug., price of the intermediate (E)-O-(3-chloro-2-propenyl)hydroxylamine hiked, lifting the cost slightly and shrinking the declining margin of technical price; the Q3 price averaged at USD10,263/t, down by 17.88% QoQ.

In Q4, prices of intermediates (E)-O-(3-chloro-2-propenyl)hydroxylamine and ethanethiol climbed up since Oct. and then stabilised; part producers were under equipment maintenance and remained a low capacity utilisation rate. However, clethodim was short for new foreign orders and sluggish in overall demand. According to CCM's monitoring data, the ex-works price of clethodim technical diminished to USD9,282/t in Dec. 2023, nudging down by 0.56% MoM or 58.68% YoY.

Forecasts on supply, demand and price in H1 2024

- **Supply:** The clethodim market is under oversupply while clethodim enterprises maintain normal operation. As for potential capacity, there is one clethodim technical project under planning and one clethodim raw material project accepted in Dec. 2023. To be specific,
 - Hebei Nongbiwei Biotechnology Co., Ltd. proposed to build a 33,100 t/a green pesticide technical project including for 6,300 t/a clethodim technical in the East Zone of Lingang Economic and Technological Development Zone, Bohai New District, Cangzhou City.
 - Ningxia Yuansheng Biotechnology Co., Ltd., wholly owned by Yifan Biotechnology Group Co., Ltd., has conducted acceptance for an (E)-O-(3-chloro-2-propenyl)hydroxylamine technical renovation and environmental protection facility upgrading and transformation project, including upgrading and transforming the existing 2,000 t/a (E)-O-(3-chloro-2-propenyl)hydroxylamine production line, transforming other production lines into 5,000 t/a (E)-O-(3-chloro-2-propenyl)hydroxylamine lines, to form a total capacity of 7,000 t/a for the raw material.
- **Demand:** Although new orders are limited at abroad currently, the peak using season of herbicides in northern hemisphere in H1 2024 is expected to drive up the overall demand.
- **Price:** In general, clethodim technical price is expected to stabilise with high possibility of picking up.

Figure 2.3-1 Ex-works prices of 85%-90% clethodim technical in China, Jan. –Dec. 2023



Source: CCM

2.4 Diquat

In H2 2023, the average ex-works price of 40% diquat TK (technical concentrate) recorded USD3,447/t, shrinking 37.38% from that in H1 against the backdrop of decreasing pyridine price, limited number of new orders and large inventories in the market, which is likely to decrease in H1 2024.

In general, prices of this product kept steady in H2 with weak demand in the market. By months, the July price of diquat TK continued its price tumble in a dull market, dipping to USD3,465/t, down by 11.87% MoM or 60.06% YoY; the price was stabilised week on week, once rebounding due to limited stocks in the market in Nov. According to CCM's monitoring data, the ex-works price of 40% diquat TK diminished to USD3,403/t in Dec. 2023, down by 2.28% MoM or 54.26% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: In H2 2023, the capacity utilisation in the industry maintained at a low level, and stocks in early stage are mainly used for export orders, which may result in insufficient supply in domestic;
- Demand: Demand for diquat TK remains dull, and is unlikely to improve due to low cost performance;
- Price: The price of diquat technical is expected to slip and hover around USD3,000/t.

Figure 2.4-1 Ex-works prices of 40% diquat TK in China, Jan.–Dec. 2023



Source: CCM

2.5 2,4-D

The market price of 2,4-D has dropped slowly in H1 2023, yet once pushed up in Sept.–Oct., mainly because of rising cost of key raw materials. In H1 2024, it is estimated to slip and hover around USD2,000/t.

With decreasing demand abroad, the monthly price of China's 2,4-D had plunged smoothly since 2022 and bottomed at USD1,774/t in July 2023, with a yearly decrease of 48.99%. Later (esp. in Sept.–Oct.), due to the price rise of its raw materials (chloroacetic acid and phenol), the ex-works price of 98% 2,4-D technical rebounded then fell slightly in late 2023. According to CCM's monitoring data, the ex-works price of 98% 2,4-D technical diminished to USD2,081/t in Dec. 2023, down by 8.34% MoM or 41.67% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: As of Jan. 2024, potential capacities for 2,4-D technical is estimated to reach 160,000/t at least, and in the short terms, producers tend to maintain sound operation. In H1 2024, the supply is expected to be stable, with news on potential capacity include,
 - In Jan. 2024, Draft of Environmental Impact Report of Hubei Xingchen Technology Co., Ltd. (Hubei Xingchen, a sub-subsubsidiary of Hubei Xingfa Chemicals Group Co., Ltd.)'s 50,000 t/a 2,4-D project was released for public announcement by local government, with public utilities, environmental protection facilities and other supporting facilities in Hubei Province. Up to date, Hubei Xingchen has constructed the 20,000 t/a 2,4-D and 5,000 t/a MCPA and supporting preparations project since July 2022.
- Demand: With overseas orders gradually sent out and the closing of stocking-up for cotton field, demand for 2,4-D technical might turn dull;
- Price: Overall, the price of 98% 2,4-D technical is expected to slip in H1.

Figure 2.5-1 Ex-works prices of 98% 2,4-D technical in China, Jan.–Dec. 2023



Source: CCM

3 Five main insecticide AI ranked by YoY change in China

3.1 Chlorfenapyr

In H2 2023, thanks to increase in overseas demand, the chlorfenapyr technical price went up first and remained basically flat afterwards, with an average price shrinking by 8.61% to USD23,226/t on a half year basis, in comparison with the 41.74% decrease in H1. With foreign orders gradually accomplished, the product price is very likely to stabilise and even slip if rigid demand in domestic fails to keep up.

In Q3, the chlorfenapyr market was buoyant due to the occurrence of rice leaf roller in July, which steadily pushed up the technical price. In Aug., the price saw an obvious uptick on tight supply, and slightly increased in Sept. as a result of low operating rate.

Entering Q4, chlorfenapyr technical price remained stable. At the end of the year, downstream formulation market started restocking, while technical producers cut the price in order to clear the stocks. According to CCM's monitoring data, the ex-works price of chlorfenapyr technical was USD23,627/t in Dec. 2023, down by 21.73% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: Although chlorfenapyr technical is under intense competition and superfluous supply, it is still one of the most red-hot products for new construction, and is expected to be stable in supply.
- Demand: Domestic market expects limited demand increase and the overseas market only has sporadic orders.
- Price: The price of chlorfenapyr technical is expected to stabilise and even slip in H1 2024.

Figure 3.1-1 Ex-works prices of 98% chlorfenapyr technical in China, Jan.–Dec. 2023



Source: CCM

3.2 Acetamiprid

In H2 2023, the average ex-works price of 95% acetamiprid technical kept downtrend and recorded USD11,499/t, down by 16.07% compared with that in H1, mainly due to the sluggishness in demand. Considering the less drop of price in the second half of 2023, the price performance of this product in H1 2024 is estimated to stabilise or slip slightly.

In Q3, the ex-works price of acetamiprid technical first dropped and then recovered forced by higher production costs, coupled with demand improved in late Sept. In Q4, the price of 2-nitroaminoimidazoline, an intermediate for imidacloprid and acetamiprid, reduced as the price of its upstream raw material ethylenediamine was set lower after new capacity coming into operation. Lowered production costs and shrinking demand dragged down the acetamiprid technical price in Nov. According to CCM's monitoring data, the ex-works price of 95% acetamiprid technical slipped to USD11,153/t in Dec. 2023, down by 2.61% MoM or 38.90% YoY.

Forecasts on supply, demand and price in H1 2024

- **Supply:** Currently, production cost rises on price hikes of raw materials, while domestic enterprises retain sound production and there are unconsumed stocks in the market. It is expected that supply in H1 will be stable, with news on potential capacity such as,
 - On 22 Jan., 2024, the environmental impact report on a technological transformation and expansion project for 5,000 t/a acetamiprid technical, 10,000 t/a thiamethoxam technical, 2,000 t/a fluazinam technical and 2,000 t/a haloxyfop-R-methyl technical of Wuzhong Linghang Biological & Pharmaceutical Co., Ltd. was made public.
- **Demand:** While the market pays high attention on nicotinamide products, demand for acetamiprid is unlikely to improve in the short term.
- **Price:** The price of acetamiprid technical is expected to stabilise or decrease in H1 2024.

Figure 3.2-1 Ex-works prices of 95% acetamiprid technical in China, Jan.–Dec. 2023



Source: CCM

3.3 Bifenthrin

In H2 2023, bifenthrin technical price oscillated at a low end, averaging at USD21,788/t, down by 23.48% compared with that in H1. Bifenthrin technical supply is stable for present, and considering formulation producers have consumed early stocks and start rigid purchasing, demand for the product is expected to increase and stabilise and even drive up the price in H1 2024.

In July 2023, the bifenthrin technical price continued downtrend in 2022 and H1 2023, sliding to USD22,174/t, down by 7.26% MoM or 47.05% YoY; in Aug.–Oct., the price slightly fell but was overall stable on lower operating rate; by early Nov., the operating rate gradually recovered, and the downstream began to stock up, which helped push up supply and demand, while the price kept dipping and hit USD21,138/t in late Dec., down by 1.48% MoM or 40.96% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: With the operating rate of pyrethroids pesticides gradually recovered in late 2023, bifenthrin technical supply is expected to be stable in H1 2024.
- Demand: Bifenthrin technical demand is expected to grow for increasing rigid purchases from formulation producers.
- Price: The price of bifenthrin technical is expected to stabilise or improve in H1 2024.

Figure 3.3-1 Ex-works prices of 97% bifenthrin technical in China, Jan.–Dec. 2023



Source: CCM

3.4 Imidacloprid

In H2 2023, most imidacloprid technical producers remained normal supply on the market. The average price of imidacloprid technical was USD12,791/t, a half-year decrease of 15.31%, which slackened off compared with the 39.33% drop from H2 2022 to H1 2023. In H1 2024, the product price will mainly be stable without significant fluctuations.

In Q3 2023, the imidacloprid technical price experienced a slight rebound as a result of increasing export orders and domestic stocking-up, plus the price hikes of raw materials. In Q4, there were few negotiations for new orders. Although part major suppliers have adjusted their operating rates, it failed to turn the price downtrend. According to CCM's monitoring data, the ex-works price of 97% imidacloprid technical diminished to USD12,562/t in Dec. 2023, down by 2.84% MoM or 33.72% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: At present, the imidacloprid technical supply remains stable, yet raw material prices are hiking, which will double down cost pressures and tune down operating enthusiasm, and then pull back on the product supply.
- Demand: The overall demand is tepid but expected to grow in future for high market attention.
- Price: The price of imidacloprid technical is expected to stabilise in H1 2024.

Figure 3.4-1 Ex-works prices of 97% imidacloprid technical in China, Jan.–Dec. 2023



Source: CCM

3.5 Emamectin benzoate

In H2 2023, the technical price of emamectin benzoate grew at first then plateaued on the whole, with an average price decreasing by 13.35% to USD51,352/t from that in H1. At the year end, the transaction price fell back a bit with stable product supply, and is expected to further slip or stabilise in H1.

In Q3, supply of emamectin benzoate technical came short in July due to recovery of overseas demand, limited production by upstream producers, etc.. Following the strong rebound of glyphosate price, emamectin benzoate technical and chlorpyrifos technical among others also saw prices pick up. In Aug., the market price of emamectin benzoate registered a short stability, as most producers did not offer quotes with a wait-and-see attitude, which sustained to Sept.

In Q4, the market mainly consumed the inventory, leading to a stable market trend. Demand for emamectin benzoate technical once increased in Oct. due to rigid replenishment by downstream formulation enterprises, and technical producers held on to the price; on the supply side, producer restored the production of emamectin benzoate technical in Dec., with quotation partially lowered. According to CCM's monitoring data, the ex-works price of 97% emamectin benzoate technical diminished to USD51,114/t in Dec. 2023, nudging down by 0.17% MoM or 29.10 YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: Although part producers of emamectin benzoate technical have lowered the operating load in early 2024, the overall product supply is expected to remain stable.
- Demand: Due to an off-season for insecticides, demand for emamectin benzoate technical is sluggish, yet it is expected to improve with the kick-start of rigid restocking for downstream formulation products.
- Price: The price of diquat technical is expected to slip or stabilise in H1 2024.

Figure 3.5-1 Ex-works prices of 70% emamectin benzoate technical in China, Jan.–Dec. 2023



Source: CCM

4 Five main fungicide AI ranked by YoY change in China

4.1 Hymexazol

After diving down from high, the hymexazol technical price first dipped and then rose steadily in H2 2023, averaging at USD11,484/t, down by 27.31% on a half-year basis, a steeper drop compared with 21.20% in H1 2023. Yet tight supply of hymexazol technical might push up the price in the coming H1.

Due to off-season, hymexazol technical price slumped in June and early July, when the demand was insipid and the market mainly consumed stocks, registering USD10,782/t in July, down by 12.05% MoM or 51.62% YoY. Entering Aug., demand for hymexazol technical revived and the supply was stable, hence the price generally stabilised in Aug.–Sept.

In Q4, tight spot goods and lagging supply drove the ex-works price of hymexazol technical up significantly to USD11,975/t by 8.93% QoQ. By Dec., 97% hymexazol technical was quoted USD12,382/t, up 3.63% MoM yet down by 27.12% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: In H2 2023, the spot goods on the market were almost consumed while the capacity utilisation in the industry maintained at a low level, which may cause insufficient supply in domestic if the situation remains unchanged after the Spring Festival.
- Demand: Demand for the product is likely to improve due to replenishment needs in pesticide applying season amid low-position inventory.
- Price: The price of hymexazol technical is expected to lift in H1 2024.

Figure 4.1-1 Ex-works prices of 97% hymexazol technical in China, Jan.–Dec. 2023



Source: CCM

4.2 Tebuconazole

In H2 2023, the tebuconazole technical price showed a rise-then-fall trajectory around the record low, with an average price down by 16.99% to USD6,811/t from that in H1, bottoming in Dec. Given the cost pressures, the H1 2024 price is likely to pick up.

In Q3, tebuconazole technical price first dropped and then rebounded, as demand slightly improved on peak season and tight spot goods, and transaction volume increased due to formulation producers' high intention for replenishing. In Q4, demand for tebuconazole technical tuned down, leading to a small decline in price. According to CCM's monitoring data, the ex-works price of 97% tebuconazole technical diminished to the lowest of this year at USD6,630/t in Dec. 2023, down by 2.21% MoM or 29.52% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: In H2 2023, the operating rates of hydrazine hydrate and triazole (intermediates of tebuconazole technical) retained low, leading to increasing costs. In order to counter with the hiking costs, tebuconazole technical enterprises lower the operating load to 30%–40% overall.
- Demand: Demand for tebuconazole technical is estimated to remain stable in the coming few months;
- Price: In H1 2024, tebuconazole technical price is likely to bottom out.

Figure 4.2-1 Ex-works prices of 97% tebuconazole technical in China, Jan.–Dec. 2023



Source: CCM

4.3 Propiconazole

In H2 2023, the average price of propiconazole technical decreased 35.35% to USD13,994/t compared with that in H1, outstripping the decline in H1 (=18.48%, vs H2 2022). Due to limited production by part producers at the end of 2023, the propiconazole technical supply may shrivel and the price may stabilise.

In Q3, the overall price of propiconazole technical represented a weak trend. In July, part triazole offers by producers ticked up and bromine price increased MoM, leading to a deficit in gross profit of propiconazole technical; in Aug., propiconazole technical producers maintained steady operation, yet demand in Europe and American markets had run its course; in Sept., production costs of propiconazole technical dropped, such as the acetophenone and bromine prices, and producers maintained sound supply, which in some way improved the profit deficit.

In Q4, demand for propiconazole technical stayed bleak, while producers limited production at the year end, contributing to a slight falloff in product price. According to CCM's monitoring data, the ex-works price of 95% propiconazole technical diminished to USD12,447/t in Dec. 2023, down by 4.12% MoM or 50.64% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: Producers limited production at the end of 2023, which may cause unstable technical supply in H1 2024.
- Demand: Demand for propiconazole technical is yet to improve and expected to remain weak.
- Price: The propiconazole technical price is expected to stabilise or even slip if without any new improvement.

Figure 4.3-1 Ex-works prices of 95% propiconazole technical in China, Jan.–Dec. 2023



Source: CCM

4.4 Azoxystrobin

In H2 2023, the azoxystrobin technical market remained stable supply but short for demand, with an average price down by 29.82% to USD22,849/t from that in H1. In H1 2024, demand from domestic formulation producers is sluggish, which makes price unlikely to rebound unless overseas order increase.

In Q3, under a stage of stock consumption, the azoxystrobin technical price dropped to USD22,867/t in July and then maintained small fluctuations. Although price of the patented technical product held, the average price in the quarter plummeted 16.09% QoQ to USD22,911/t. In Q4, with a short-lived cost support, the average price basically levelled with that in last quarter. Suppliers operated at a stable load, mainly delivering unexecuted order in earlier period, while the market and downstream only stocked up when there were lower prices. According to CCM's monitoring data, the ex-works price of 96% azoxystrobin technical was USD22,305/t in Dec. 2023, down by 3.03% MoM or 42.44% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: At present, the overall supply and cost of azoxystrobin technical remains stable, with main intermediate diethyl bis(hydroxymethyl)malonate maintaining normal operation in North China and East China and the inventory increasing.
- Demand: Demand for azoxystrobin formulation is slack, which pulls back on that for technical product.
- Price: The price of azoxystrobin technical is likely to plateau in H1 2024.

Figure 4.4-1 Ex-works prices of 96% azoxystrobin technical in China, Jan.–Dec. 2023



Source: CCM

4.5 Dimethomorph

In H2 2023, dimethomorph technical price averaged at USD7,784/t, down by 23.01% compared with that in H1, a sharper decrease than 18.01% in H1. In H1 2024, the price is expected to stabilise or slightly drop with resumption of operation.

In Q3, due to overcapacity and fierce competition, producers of dimethomorph technical delivered goods at low prices on average that diminished to USD7,480.49/t, down by 13.11% QoQ or 41.39% YoY. In Q4, under cost pressure, producers lowered the operating rates of dimethomorph technical, unwilling to destock by lowering prices, leading to a 7.44% MoM rebound in price that hit USD8,007/t in Oct. At the year end, operating rates remained low, and the market mainly consumed stocks. According to CCM's monitoring data, the ex-works price of 98% dimethomorph technical rebounded to USD8,185/t in Dec. 2023, nudging up by 1.40% MoM or down 31.41% YoY.

Forecasts on supply, demand and price in H1 2024

- Supply: While the inventory of dimethomorph technical has been almost consumed, the production has gradually recovered, making for an expected stable supply.
- Demand: Demand for dimethomorph technical use is predicted to increase.
- Price: The price of dimethomorph technical is expected to stabilise or slip slightly in H1 2024.

Figure 4.5-1 Ex-works prices of 98% dimethomorph technical in China, Jan.–Dec. 2023



Source: CCM

5 Forecast

In 2024, pesticide price is expected to plateau in H1 and slightly grow in H2. With destocking almost completed on overseas market, the pesticide price will be kept within a rational range without drastic fluctuations; some pesticide AI varieties may see price continue to drop on increasing capacity delivery.

China's pesticides export picked up in H2 2023, and is predicted to continue to improve in H1 2024. However, it should be noted that a raft of Indian pesticide products are entering the international market at a lower price, bringing challenges to China's pesticide export.

Notably, China's genetically modified (GM) soybean and GM corn is marching from field experiment to commercialised application, which is anticipated to raise the usage of herbicides such as glyphosate and glufosinate-ammonium for GM soybean and GM corn in the future, bringing benefits to related enterprises. In addition, pre-emergence soil treatment herbicides like pendimethalin and metolachlor and post-emergence herbicides like bentazone have seen demand increase due to promotion of corn-soybean mixed planting in recent years, and the domestic demand is expected to rise with the related crop planting area further expanded.

New distribution channels and large growers are expected to become new growth forces of pesticide demand. Besides the mainstream traditional channels, pesticide sale is cracking new channel through incessant adjustment. A score of pesticide technical enterprises have set up new sales departments or teams to extend and sell pesticides by live-streaming, short videos and other modes, which is expected to drive up the domestic sales. Besides, large growers and professional farmers of younger generation mushroom on the wave of land transfer and large greenhouse cropping, opening up new demand for downstream formulations.

Amid a gloomy market and price downturn in recent two years, a fraction of pesticide enterprises with weaker strength and smaller scale have gradually retreated from the market, while capable enterprises are doubling down on investments, extending industrial chains and expanding capacity in a proactive way so as to grab more market share, which will in turn feed into fiercer competition in the industry. However, with capacity further concentrated and enterprise upgrading continued, strong players will have increasing ability to control the pricing power of their products in the future.

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