

Herbicides China Monthly Report 202301

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Headline

At the end of 2022, Anhui Kelihua had successfully expanded its oxadiazon TC production capacity to 1,200 t/a, and completed a new 300 t/a oxadiargyl TC production line.

Jiangsu Yangnong has planned to let its newly-established subsidiary Liaoning Youchuang to undertake a 15,650 t/a pesticide TC and 7,000 t/a pesticide intermediate project. Pesticide TC products covered in this project include: imazethapyr, imazamox, imazapic, clethodim, sethoxydim, anilofos, pyrisoxazole, diflufenican, paclobutrazol, cyhalothrin, pydiflumetofen and a series of diamide insecticides.

Into Jan. 2023, the majority of herbicides TC saw their ex-works price go down, but a few products had stable price.

The ex-works price of 2,4-D TC in China recovered a bit in Jan., though raw material costs have reduced. As the Spring Festival is around the corner, demand for 2,4-D TC grew since downstream buyers have been stockpiling. It is expected that 2,4-D price would fluctuate slightly, and the chance for a surge is slim in the short term.

In early Jan., the FOB price of paraquat 42% TK in China declined by 7.11% MoM, but the ex-works price of pure pyridine in China kept stable.

In 2022, the price of diquat declined in general, along with gradually realised diquat TK capacity and the promotion of diquat dichloride products.

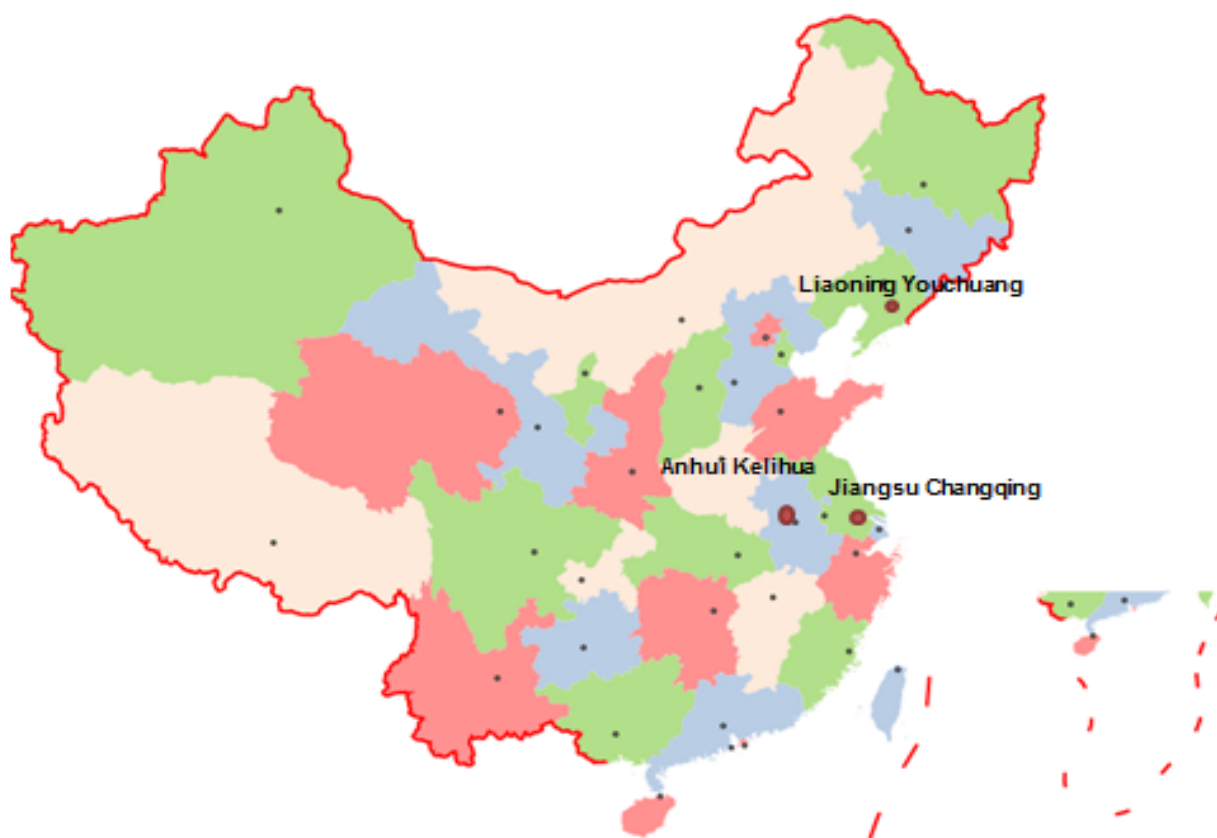
The FOB price of paraquat in China fluctuated in 2022 with a surge in the middle, mainly due to rising price of pyridine, limited producers' production capacity, and changes of demand.

Throughout 2022, the central government of China issued six pesticide-related environmental protection policies. It can be seen that the current trend in the development of pesticide industry is to cut down use, toxicity and residue of pesticides.

In 2022, MARA approved 197 new herbicide products, mainly of low toxicity. Popular active ingredients are glufosinate-ammonium, glyphosate and 2,4-D.

In 2022, China's herbicides TC export peaked in May. The top three active ingredients of the herbicides TC exported from China in this period were glyphosate, atrazine and 2,4-D, and the three biggest export destinations were Brazil, the US and Argentina. Sichuan Leshan Fuhua Tongda Agro-chemical Technology Co., Ltd. ranked the first in export volume of herbicides TC products.







Editor's note

Throughout 2022, the central government of China issued six pesticide-related environmental protection policies. It can be seen that the current trend in the development of pesticide industry is to cut down use, toxicity and residue of pesticides. The year also witnessed 197 new herbicide products get approved of registration here in China.

Into 2023, the first month saw ex-works prices of the majority of herbicides TC go down, the prices of atrazine TC, bensulfuron-methyl TC, pretilachlor TC and florasulam TC keep stable, and the price of 2,4-D TC tick up. Supply of these herbicides has been quite sufficient with stable operation in producers.

As regards company dynamics, Anhui Kelihua has successfully finished the technological transformation and capacity expansion of its oxadiazon TC production line, Liaoning Youchuang has planned to build a 15,650 t/a pesticide TC and 7,000 t/a pesticide intermediate project, and Jiangsu Changqing has planned to launch a 5,000 t/a S-metolachlor TC expansion project.

The USD/CNY exchange rate in this newsletter is USD1.00 = CNY6.9475 on 3 Jan., 2023, sourced from the People's Bank of China. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.





Company dynamics

Anhui Kelihua finishes technological transformation & expansion of oxadiazon TC line

Summary: At the end of 2022, Anhui Kelihua had successfully expanded its oxadiazon TC production capacity to 1,200 t/a, and completed a new 300 t/a oxadiargyl TC production line.

Early Jan., CCM learned from Anhui Kelihua Chemical Co., Ltd. (Anhui Kelihua) that it had finished the technological transformation and capacity expansion of its existing oxadiazon TC line, and built up a new 300 t/a oxadiargyl TC production line. The company's oxadiazon capacity increased from 800 t/a to 1,200 t/a.

Currently, there are only a few pesticide enterprises that have set up oxadiargyl TC production line with certain scale. Lianyungang Jindun Agrochemical Co., Ltd. (Lianyungang Jindun) has 500 t/a oxadiargyl TC capacity, but the line has been kept lying idle. With Anhui Kelihua putting its line into operation, oxadiargyl TC supply in China may be improved.

Anhui Kelihua mainly engages in pesticide business. It is located in the chemical concentration zone of Suzhou Economic and Technological Development Zone, Suzhou City, Anhui Province. The company chose to expand oxadiazon capacity and build oxadiargyl capacity to boost its competitiveness in the market as well as to follow its own long-term development planning. Oxadiazon TC is Anhui Kelihua's flagship product; with multiple-year experience in oxadiazon production, the company holds all the required certificates for production and trade concerning the product. Its pesticide registration for oxadiazon 97% TC (registration code: PD20060074) was obtained in 2006; it remains valid after renewal. It also acquired pesticide registration for oxadiargyl 96% TC (registration code: PD20132304) in 2013, and the validity lasts at least to Nov. 2023. The company boasts other certificates for circulation of its oxadiargyl TC products, too.

Oxadiazon is an N-heterocyclic herbicide. It is mainly used to control annual gramineous weeds and broadleaf weeds on rice fields, and it is also workable on fields of peanut, soybean, cotton, potato, asparagus, and in tea gardens and orchards. In recent years, along with changes to crop planting structure in China, oxadiazon market has expanded fast. Meanwhile, oxadiazon export from China has remained quite stable.

Large-scale active oxadiazon TC producers in China, beyond Anhui Kelihua, include Hunan Xingtong Chemistry Technology Co., Ltd. with 1,000 t/a oxadiazon TC capacity, Ningxia Lantian Agricultural Development Co., Ltd. with 1,000 t/a and Hefei Xingyu Chemical Co., Ltd. with 300 t/a. There are some domestic pesticide producers that have suspended for long time their oxadiazon TC lines, out of workplace safety and environmental protection concerns. For instance, Lianyungang Jindun's 1,500 t/a oxadiazon TC production equipment is still lying idle.

In addition, some oxadiazon TC producers decided to stop the lines, considering market changes as well as their own development plans. Chongqing Pesticide & Chemical Industry (Group) Co., Ltd. is one of such producers. It phased out its 500 t/a oxadiazon TC line. On the other hand, some others are planning oxadiazon TC projects to join the market, these enterprises including Anhui Guangxin Agrochemical





Co., Ltd. and Shandong Taixing Chemical Technology Co., Ltd.

Oxadiargyl is a recent high-profile herbicide in Chinese pesticide market. It has high activity and leaves small residue, which is in line with the current pesticide use trend. In terms of control target, it has broader scope than oxadiazon, which makes oxadiargyl more cost-effective. Existing domestic oxadiargyl TC producers, beyond Anhui Kelihua, are: Lianyungang Jindun with 500 t/a, Ningxia Lantian Agricultural Development Co., Ltd. with 600 t/a and Hefei Xingyu Chemical Co., Ltd. with 50 t/a. The overall capacity in China is not large. But potential players are coming. For example, Anhui Guangxin Agrochemical Co., Ltd. has planned to construct 500 t/a oxadiargyl TC production line.

As for Lianyungang Jindun, though its production lines of oxadiazon TC and oxadiargyl TC are out of service at present, the company has been actively involved in rectification and applied for production resumption at local government. If it is approved, suspension in the company since April 2018 will finally end and production will resume.

Liaoning Youchuang plans to build pesticide TC & intermediate project

Summary: Jiangsu Yangnong has planned to let its newly-established subsidiary Liaoning Youchuang to undertake a 15,650 t/a pesticide TC and 7,000 t/a pesticide intermediate project. Pesticide TC products covered in this project include: imazethapyr, imazamox, imazapic, clethodim, sethoxydim, anilofos, pyrisoxazole, diflufenican, paclobutrazol, cyhalothrin, pydiflumetofen and a series of diamide insecticides.

Late Dec., CCM learned from Jiangsu Yangnong Chemical Co., Ltd. (Jiangsu Yangnong) that its wholly-owned subsidiary Liaoning Youchuang Crop Protection Co., Ltd. (Liaoning Youchuang) had planned to launch a 15,650 t/a pesticide TC and 7,000 t/a pesticide intermediate project. Through the project, the subsidiary would build capacity for pesticides imazethapyr TC (1,500 t/a), imazamox TC (200 t/a), imazapic TC (100 t/a), clethodim TC (5,000 t/a), sethoxydim TC (250 t/a), anilofos TC (500 t/a), pyrisoxazole TC (100 t/a), diflufenican TC (500 t/a), paclobutrazol TC (500 t/a), cyhalothrin TC (3,000 t/a), pydiflumetofen TC (2,500 t/a), diamide insecticides TC (1,500 t/a), and for pesticide intermediates chloropyridines (2,000 t/a), cyclohexanediones (2,000 t/a) and triazole (3,000 t/a). According to its plan, a total of 9 workshops and 11 production lines would be built. It should be noted that some products will share the lines via alternate operation. Liaoning Youchuang obtained the record filing certificate for this investment project issued by local government in Sept., and it is actively pushing ahead with other necessary administrative formalities

Liaoning Youchuang, registered in the economic development zone of Huludao City, Liaoning Province, was founded in June 2022. After the establishment, Jiangsu Yangnong acquired a piece of land for a factory in the economic development zone. In Jiangsu Yangnong's planning, Liaoning Youchuang will become a producer of pesticides TC and pesticide intermediates. This large-scale project is Liaoning Youchuang's first investment, and it serves Jiangsu Yangnong's overall development plan. It is also one of Jiangsu Yangnong's key projects, taking the advantage of its R&D strengths, answering to customer demands as well as demand trends in pesticide market.

Jiangsu Yangnong, as a leading conglomerate in China's pesticide industry, has had long set up multiple large production bases. Also in Liaoning Province, Jiangsu Yangnong wholly but indirectly owns the grandson company Shenyang Sciencreat Chemicals Co., Ltd.





(Shenyang Sciencreat). Shenyang Sciencreat is based in the economic development zone of Shenyang City. It boasts production capacity for pymetrozine TC (1,000 t/a), tetrachlorantraniliprole TC (50 t/a), fenaminstrobin TC (50 t/a), pyrisoxazole TC (50 t/a), bentazone TC (100 t/a), cyhalofop-butyl TC (50 t/a), florasulam TC (50 t/a), clomazone TC (500 t/a), pyriminostrobin TC (25 t/a), cyetpyrafen TC (300 t/a), anilofos TC (300 t/a), flumorph TC (50 t/a), pyraoxystrobin TC (50 t/a), enostroburin TC (50 t/a), epoxiconazole TC (550 t/a), paclobutrazol TC (200 t/a), diflufenican TC (500 t/a), clethodim TC (600 t/a), tralkoxydim TC (200 t/a), sethoxydim TC (200 t/a), imazethapyr TC (800 t/a), imazamox TC (100 t/a), imazapic TC (100 t/a) and mesotrione TC (1,400 t/a).

Of the planned products, diflufenican is an herbicide to control weeds in fields of maize, soybean and wheat. It is regarded as a hot herbicide product in China's pesticide market in the future. Currently, beyond Shenyang Sciencreat, Chinese pesticide producers equipped with large-scale diflufenican production lines mainly include Jiangsu Corechem Co., Ltd., ADAMA Huifeng (Jiangsu) Co., Ltd., Jiangsu Kuaida Agrochemical Co., Ltd. and Chizhou Feihaoda Chemical Co., Ltd. Once Liaoning Youchuang's diflufenican line is completed and put into operation, the supply of this TC product in domestic market will be increased.





Market analysis

Prices of most herbicides TC drop in early Jan.

Summary: Into Jan. 2023, the majority of herbicides TC saw their ex-works price go down, but a few products had stable price.

Into Jan. 2023, the majority of herbicides TC saw their ex-works price go down, while atrazine TC, bensulfuron-methyl TC, pretilachlor TC and florasulam TC had stable price.

In early Jan., of triazine herbicides, atrazine TC, though it has still been in a slow season, had stable price, which was supported by high raw material costs. The ex-works price of ametryn TC recovered by 4.65% MoM to USD6,477/t (RMB45,000/t) amid growing demand. Of sulfonylurea herbicides, bensulfuron-methyl TC kept a stable price, while nicosulfuron TC and quizalofop-P-ethyl experienced some 3% to 4% MoM drops.

Amide herbicides had different demand trends, but production costs of these herbicides stayed high, affected by raw material prices. Pretilachlor TC price kept stable, while the price of acetochlor TC climbed 2.56% MoM to USD5,757/t (RMB40,000/t) and that of metolachlor TC went up 3.48% MoM to USD8,564/t (RMB59,500/t). As for organophosphorus herbicides, shrinking export and low trade volume resulted from dwindled confidence in downstream buyers drove the prices down. Glufosinate-ammonium TC price dived 17.38% MoM to USD22,310/t (RMB155,000/t) and glyphosate TC price dipped by 0.99% MoM, landing at USD7,197/t (RMB50,000/t).

Ex-works price of florasulam TC remained stable. The price of export-oriented diquat TK went down 1.89% MoM to USD7,485/t (RMB52,000/t). However, the price of diuron TC kept going up, increasing by 4.17% MoM to USD7,197/t (RMB50,000/t).





TABLE 1: Ex-works prices of main herbicides TC in early Jan. 2023

Category	Product	Content	Ex-works price in early Jan., RMB/t	USD/t	MoM change based on RMB
Triazine herbicides	Atrazine TC	97%	36,000	5,181.72	Basically flat
	Ametryn TC	95%	45,000	6,477.15	Up
Sulfonylurea herbicides	Nicosulfuron TC	95%	225,000	32,385.75	Down
	Quizalofop-P-ethyl TC	95%	227,500	32,745.59	Down
	Bensulfuron-methyl TC	96%	192,000	27,635.84	Basically flat
Amide herbicides	Pretilachlor TC	95%	34,000	4,893.85	Basically flat
	Acetochlor TC	92%	40,000	5,757.47	Up
	Metolachlor TC	97%	59,500	8,564.23	Up
Organophosphorus herbicides	Glufosinate-ammonium TC	95%	155,000	22,310.18	Down
	Glyphosate TC	95%	50,000	7,196.83	Down
Triazolo[1,5-a]pyrimidine-2-sulfonanilide herbicides	Florasulam TC	98%	510,000	73,407.70	Basically flat
Bipyridinium herbicides	Diquat TK	40%	52,000	7,484.71	Down
Substituted phenylurea herbicides	Diuron TC	97%	50,000	7,196.83	Up

Source:CCM

2,4-D TC price increases in Jan.

Summary: The ex-works price of 2,4-D TC in China recovered a bit in Jan., though raw material costs have reduced. As the Spring Festival is around the corner, demand for 2,4-D TC grew since downstream buyers have been stockpiling. It is expected that 2,4-D price would fluctuate slightly, and the chance for a surge is slim in the short term.

In H1 2022, the ex-works price of 2,4-D TC in China dropped continuously till May; it climbed up bit by bit from June to Aug., and then stabilised for a while before another dip in Dec. 2022. Early Jan. 2023, the price increased by 4.35% MoM to USD3,454/t (RMB24,000/t). As the Spring Festival is around the corner, demand for 2,4-D TC grew since downstream buyers wanted to stockpile some goods, out of





concerns for production resumption after the holidays and logistics before and after this period. Yet 2,4-D producers were quite inactive in accepting new orders. The majority of 2,4-D producers have operated inactively, so the supply has not been large.

Prices of 2,4-D's raw materials dropped in general since July 2022. In H2 2022, the ex-works price of phenol shot from USD1,377/t (RMB9,207/t) in July to USD1,522/t (RMB10,803/t) in Oct. However, with imported supplies and slipping demand, the price started to fall in Nov. and ended at USD1,110/t (RMB7,905/t) in Dec. The Jan. price kept the downtrend, landing at USD1,072/t (RMB7,450/t), down 5.76% MoM (based on RMB price). As for chloroacetic acid, its ex-works price edged up during Sept.–Nov. 2022, but it dropped to USD515/t (RMB3,670/t) in Dec. In Jan. 2023, it plummeted 23.71% MoM to USD403/t (RMB2,800/t).

Decreased raw material costs may become an incentive to perk up operating rate in the 2,4-D manufacturers. However, downstream buyers may first consume their 2,4-D stock. It is expected that the ex-works price of 2,4-D TC would fluctuate slightly in the short term.

TABLE 2: Monthly ex-works prices of phenol and chloroacetic acid in China, July 2022–Jan. 2023

Month	Phenol		Chloroacetic acid	
	USD/t	RMB/t	USD/t	RMB/t
July 2022	1,377	9,207	579	3,870
Aug. 2022	1,371	9,253	524	3,537
Sept. 2022	1,517	10,444	529	3,640
Oct. 2022	1,522	10,803	525	3,730
Nov. 2022	1,238	8,925	520	3,750
Dec. 2022	1,110	7,905	515	3,670
Jan. 2023	1,072	7,450	403	2,800

Source:CCM



FIGURE 1: Ex-works price of 96% 2,4-D technical in China, Jan. 2022–Jan. 2023



Source:CCM



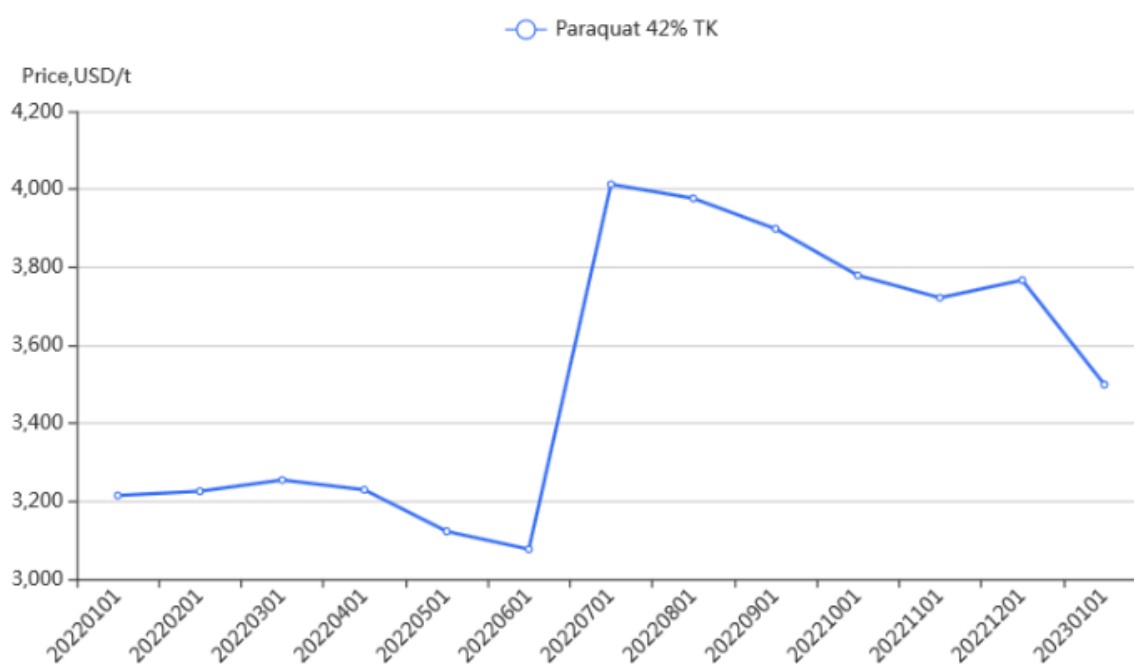
Paraquat and pyridine

Paraquat price in China drops in Jan.

Summary: In early Jan., the FOB price of paraquat 42% TK in China declined by 7.11% MoM, but the ex-works price of pure pyridine in China kept stable.

CCM's price monitoring data show that the FOB price of paraquat 42% TK in China declined by 7.11% MoM to USD3,499/t in Jan., though the price still registered a 8.85% rise on a yearly basis. The ex-works price of pure pyridine kept stable this month, at USD6,045/t (RMB42,000/t), which was 50% higher than the price in Jan. 2022.

FIGURE 2: FOB price of paraquat 42% TK in China, Jan. 2022–Jan. 2023



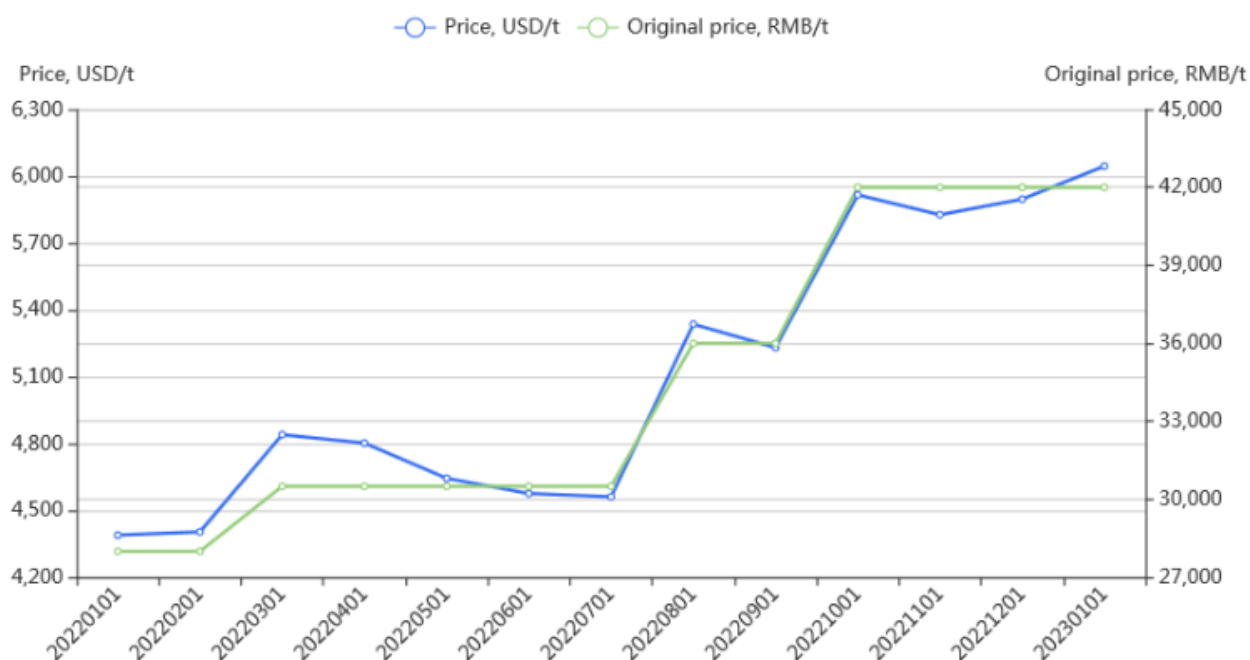
Note: The monthly prices here are the prices recorded early each month.

Source: CCM





FIGURE 3: Ex-works price of pure pyridine in China, Jan. 2022–Jan. 2023



Note: The monthly prices here are the prices recorded early each month.

Source: CCM

Diquat price in general downtrend in 2022

Summary: In 2022, the price of diquat declined in general, along with gradually realised diquat TK capacity and the promotion of diquat dichloride products.

With more countries issuing a ban on paraquat, some countries have seen their diquat imports grow rapidly. Diquat is a major alternative to paraquat for its dehydrating performance.

Major diquat suppliers in China are Redsun Group Co., Ltd. (Redsun Group), Yongnong BioSciences Co., Ltd. (Yongnong BioSciences) and Shandong Luba Chemical Co., Ltd. (Shandong Luba). Diquat products exported are mainly diquat dibromide, while diquat dichloride, which is only produced by Redsun Group currently, is mainly for domestic market. Total diquat capacity in China is around 50,000 t/a, and it is in a quick expansion. News has come that:

- Redsun Group: it built up 15,000 t/a (converted to 100% AI) diquat dichloride lines in 2022, and it has planned to expand diquat capacity (diquat dichloride included) to 60,000 t/a in the future.
- Yongnong BioSciences: it built up 16,000 t/a (converted to 100% AI) diquat dibromide lines in Ningxia Hui Autonomous Region in 2022.
- Shandong Luba: it has planned to construct 10,000 t/a (converted to 100% AI) diquat dibromide project in Dezhou City, Shandong Province.

Thus it seems that diquat capacity in China will far exceed its market demand in the future.

The diquat price experienced an overall downtrend in 2022. In Jan., COVID-19 prevention & control measures were strict, plus influences from the Spring Festival and Beijing Winter Olympics, which put much pressures on logistics. The Jan. price climbed up, as spot goods





shrank and inventory was consumed. Besides, operating rate did not improve and production costs were kept quite high, so diquat producers were reluctant to let the price go down. In mid-Feb., operating rate was rather slow to move up, though production resumed after the holidays. Shortfall in supplies to satisfy export demand was large. Tight supply pushed up the price in domestic market. Increasing operating rate brought the price down in March. From March to Sept., there was still a shortfall for diquat TK export. Inventory was kept low and supply shortage continued. The price of diquat dibromide was relatively stable in domestic market though. Meanwhile, diquat dichloride products were actively promoted. In Oct. and Nov., as new capacity started to be put into use, diquat price dropped. In Dec., export was sluggish, and more new capacity was utilised, the price dived.

At present, mainstream products for export market are still diquat dibromide products, and diquat dichloride products are marketed domestically. Production cost of diquat dichloride is less than that of diquat dibromide, and the efficacy of the former is 1.4 times of that of the latter. Redsun Group has been taking proactive actions to acquire pesticide registration certificates abroad for its diquat dibromide products, which would then open the door for it to provide a more cost-effective dehydrating solution to the international market.

FIGURE 4: Monthly ex-works price of diquat 40% TK in China, Jan.–Dec., 2022



Source:CCM

FOB price of paraquat marks great growth in 2022

Summary: The FOB price of paraquat in China fluctuated in 2022 with a surge in the middle, mainly due to rising price of pyridine, limited producers' production capacity, and changes of demand.

In 2022, the FOB price of paraquat in China fluctuated greatly with a great growth in the middle of the year, induced by the rising pyridine price, the limited production capacity of producers and changes of demand.

In Jan.–June, the paraquat price moved rather steadily, amidst stable ex-works price of pyridine and slow-moving export trade. In



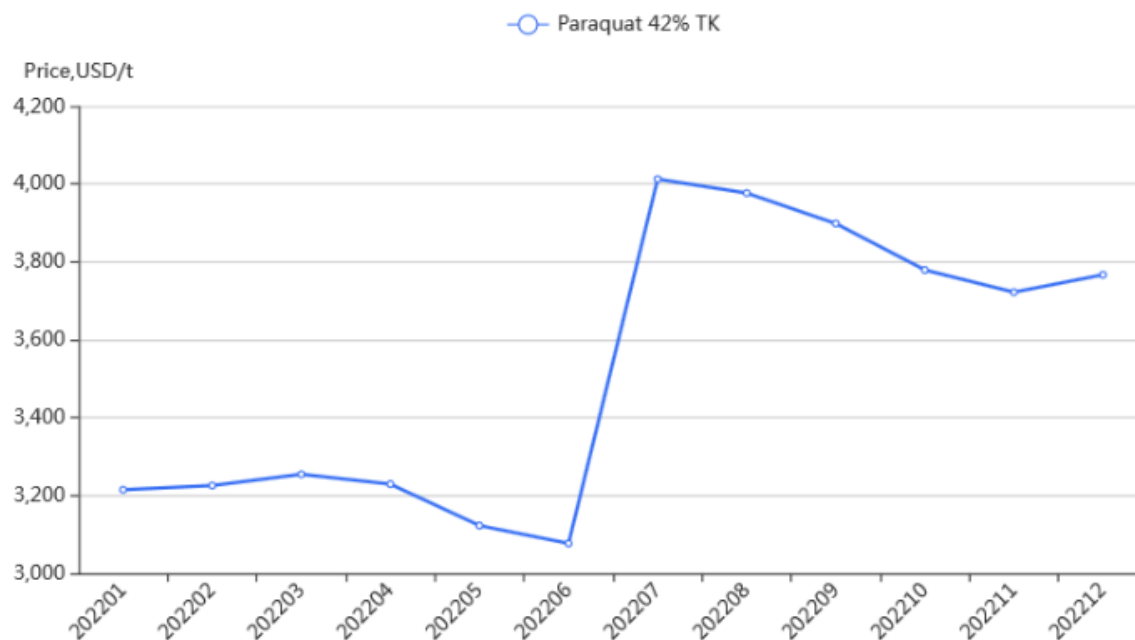


June–July paraquat price surged and has remained high since, though edging down slightly in Aug.–Sept. and trending to stability in Oct.–Dec. The changes in downstream demand and declining prices of glyphosate and glufosinate—two good alternatives to paraquat—contributed to a slight downward fluctuation in the product price in late 2022.

Reasons for the higher FOB price of paraquat in 2022:

- Raw material pyridine's price kept rising, the market saw shortage of spot goods, and producers suffered lasting cost pressure;
- There are few qualified paraquat producers in China, and the qualified ones had been in high load production so they received limited amount of new orders;
- Paraquat enjoyed a growing demand from the overseas market and strong purchase intention;
- Pressured by logistics issues relating to unavailable shipping containers and difficulty in shipment booking, paraquat producers reduced their sales volume.

FIGURE 5: FOB Shanghai price of 42% paraquat TK in China, Jan.–Dec. 2022



Source:CCM



FIGURE 6: Ex-works price of pure pyridine in China, Jan.–Dec. 2022



Source:CCM



Policy

Development trend in pesticide industry: to reduce use, toxicity and residue

Summary: Throughout 2022, the central government of China issued six pesticide-related environmental protection policies. It can be seen that the current trend in the development of pesticide industry is to cut down use, toxicity and residue of pesticides.

Throughout 2022, the central government of China issued six pesticide-related environmental protection policies.

On 25 Jan., 2022, the Ministry of Ecology and Environment of the People's Republic of China (MEE) together with other departments notified the issuance of the *Action Plan for Winning the Battle Against Pollution in Agricultural Industry and in Rural Areas (2021–2025)*. This plan answers to the call of the central government's *Guideline on Further Prevention and Control of Pollution*, and sticks to the principles of carrying out targeted, scientific and law-based pollution control. It put forward that attentions should be focused on weak links, on key fields like treatment of domestic wastewater and garbage in rural areas, treatment of black and odorous water body, use reduction on and efficacy enhancement of fertilisers and pesticides, recycling of agricultural film, and prevention & control of pollution from breeding activities. It suggested to take Beijing-Tianjin-Hebei region, the Yangtze River Economic Belt, Greater Bay Area and Yellow River Basin as key regions, and to strengthen reduction at the source, resource utilisation, pollution and carbon emission reduction, ecological restoration, so as to push ahead with improving living environment in rural areas and controlling agricultural non-point source pollution. Specifically, the plan mentioned that efforts should be made to cut down the use of fertilisers and at the same time increase their efficacy, slash the consumption of and damages brought by pesticides. It set forth a goal of at least 43% use efficiency of pesticides and fertilisers on major crops by 2025.

On 1 April, 2022, the MEE published the notice of issuing the Implementing Plan for Environmental Impact Assessment and Pollutant Discharge Permitting in the 14th Five-Year Period. The policy aims for improving the quality of eco-environment. It sticks to the working principles of targeted, scientific and law-based pollution control, of comprehensive, systemic and at-the-source treatment, and of forging synergies in pollution and carbon emission reduction. The plan decided to implement the classified eco-environment management system. It is required to raise management efficiency of environmental impact assessment in key areas and key industries, to implement pollutant discharge permit system across the board, to promote the reform of "streamlining administration, delegating powers, and improving regulation and services", and to give full play to the advantages of environmental impact assessment and pollutant discharge permitting in preventing at the source and in monitoring and regulating over the processes. Specifically, the plan mentioned that management policies on environmental impact assessment should be improved for the industries including petrochemical, chemical, coal chemical, pesticide and dye intermediate, and day-to-day supervision on them should be strengthened.

On 4 May, 2022, the General Office of the State Council of the People's Republic of China published the notice of issuing the *Action Plan for the Control of Emerging Pollutants*. The action plan pointed out that focus should be put on effectively preventing the environmental and health risks of new pollutants, with targeted, scientific and law-based pollution control as the working principle. The concept of full life-cycle environmental risk management should be followed, and coordinated efforts should be made to manage environmental risks of new pollutants. Investigation, assessment, category-based management, and whole-process environmental risk control should be carried out,





and institutional and technological support should be strengthened. And a control system for emerging pollutants should be improved. The plan mentioned that management of pesticide use and the administration of pesticide registration should be enhanced, and the mechanisms for post-registration environmental risk monitoring and re-evaluation be improved. High-toxicity high-risk pesticides and adjuvants with persistent impact on and bioaccumulation in surrounding environment should be strictly regulated. By the end of 2025, re-evaluation of a batch of high-toxicity high-risk pesticide products should be completed. And actions for usage reduction on and efficacy enhancement of pesticides should be continued, development of high-efficacy low-risk pesticides encouraged, and the phase-out and substitution of high-toxicity high-risk pesticides pushed forward. It is encouraged in the plan the use of large-volume packaging and the recycling and disposal of pesticide packaging wastes. Meanwhile, the action plan also mentioned that pilot programs to treat new pollutants should be launched in selected key enterprises and chemical industrial parks located in basins of the Yangtze River and Yellow River, near major drinking water sources, along key estuaries, bays and mariculture zones, and in Beijing-Tianjin-Hebei region, the Yangtze River Delta and the Pearl River delta. The enterprises and chemical parks will mainly be selected from those involved in industries like petrochemical, coating, textile printing and dyeing, rubber, pesticide and pharmaceutical. With such programs, demonstration technologies will be developed concerning green substitution of toxic hazardous chemicals, emission reduction of new pollutants, and treatment of new pollutants in sewage sludge, waste water and residue.

On 19 Sept., 2022, the MEE, jointly with other 16 ministries and departments, published the notice of issuing the *Action Plan for Winning the Battle for Protection & Restoration in the Yangtze River Basin*. This action plan follows the President Xi's thoughts on ecological civilisation and abides by the *Yangtze River Protection Law*. It emphasised the totality of ecosystem and the wholeness of the basin, and insisted on giving priority to ecology, on green development, and on comprehensive, systemic and at-the-source treatment. The plan put forward 28 specific tasks and 6 safeguard measures. With clear goals and tasks, interdepartmental cooperation pattern would be formed to carry out Yangtze River conservation. The policy mentioned that by the end of 2025, use efficiency of pesticides and chemical fertilisers should surpass 43%.

On 30 Oct., 2022, the Standing Committee of the 13th National People's Congress decided to adopt the *Yellow River Protection Law of the People's Republic of China*. The law has clear provisions on strengthening ecological protection and restoration, carrying forward conservation and intensive utilisation of water resources, controlling floods, stimulating high-quality development, as well as protecting, inheriting, and promoting the Yellow River culture. Specifically, it mentioned that relevant departments should restrict the total volume of pesticides and chemical fertilisers in use, provide guidance and technical services, promote advanced and applicable techniques like green prevention and control practices, carry out cyclic utilisation of farmland withdrawal water in irrigated areas, and strengthen monitoring and early warning of agricultural pollution sources.

On 18 Nov., 2022, Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) published the notice of issuing the *Action Plan for Chemical Pesticide Reduction to 2025*. The plan emphasised that reduction work should focus on major crops, major diseases & pests, key areas and key links. Technological integration innovation should be strengthened, an integrated technology system for crop disease & pest prevention and control be fostered that is eco-friendly as well as ecologically compatible, and monitoring and early warning efforts be intensified. Green control and large-scale control should be promoted, and more guidance be given on how to use pesticides in a scientific and safe way. Chemical pesticide reduction goals would be pursued only on the basis of effectively controlled



diseases & pests and secured agricultural production. Specifically, the plan pointed out that by 2025, an integrated technology system for crop disease & pest prevention and control that is eco-friendly and ecologically compatible must be set up and strengthened, pesticide variety structure improved, and the skills to use pesticides in a scientific and safe way upgraded. The downward momentum of total chemical pesticide consumption should be maintained with utmost efforts.

TABLE 3: Pesticide-related environmental protection policies rolled out in China in 2022

No.	Policy	Issuing date	Issuing authority
1	<i>Action Plan for Winning the Battle Against Pollution in Agricultural Industry and in Rural Areas (2021–2025)</i>	25 Jan., 2022	MEE, MARA, Ministry of Housing and Urban-Rural Development, Ministry of Water Resources, National Administration for Rural Revitalisation
2	<i>Implementing Plan for Environmental Impact Assessment and Pollutant Discharge Permitting in the 14th Five-Year Period</i>	1 April, 2022	MEE
3	<i>Action Plan for the Control of Emerging Pollutants</i>	4 May, 2022	General Office of the State Council
4	<i>Action Plan for Winning the Battle for Protection & Restoration in the Yangtze River Basin</i>	19 Sept., 2022	Seventeen ministries and departments including MEE
5	<i>Yellow River Protection Law of the People's Republic of China</i>	30 Oct., 2022	Standing Committee of the National People's Congress
6	<i>Action Plan for Chemical Pesticide Reduction to 2025</i>	18 Nov., 2022	MARA

Source:CCM

After the policies rolled out, many provinces accordingly formulated their regional policies. And it can be concluded that the general development trend of pesticide industry in China is to reduce use, toxicity and residue of pesticides.

TABLE 4: Pesticide-related environmental protection policies rolled out by some provincial governments in China in 2022

No.	Policy	Issuing date	Issuing authority	Note
1	<i>Action Plan for Pesticide Regulation and Chemical Pesticide Reduction in Guizhou Province in 2022</i>	31 March, 2022	Department of Agriculture and Rural Affairs of Guizhou Province	To reduce the use of and to increase the efficacy of chemical pesticides.
2	<i>Implementing Plan for Winning the Battle Against Pollution in Agricultural Industry and in Rural Areas (2021–2025) in Shaanxi Province</i>	5 May, 2022	Department of Ecology and Environment of Shaanxi Province	To launch the campaign for usage reduction on and efficacy enhancement of chemical fertilisers and pesticides. To make efforts to cut down the use of fertilisers and at the same time increase their efficacy, and slash the consumption of and damages brought by pesticides.
3	<i>Work Plan for Supervising Environmental Impact Assessment and Pollutant Discharge Permitting in Shaanxi Province in 2022</i>	6 May, 2022	Department of Ecology and Environment of Shaanxi Province	The work plan focused on illegal actions undermining the effects of at-the-source prevention of environmental impact assessment mechanism and impeding full-coverage of pollutant discharge permitting targeting stationary pollution sources. It required investigation and punishment according to the law, and severe crackdown on and containment of crimes involving frauds in environmental impact (EI) assessment, shoddy composition of EI report, ignoring requirements of environmental impact assessment, unlicensed pollutant discharge, and discharge not by permit.
4	<i>Action Plan for Strengthening Efforts to Win the Battle Against Pollution in Hainan Province</i>	5 Aug., 2022	People's Government of Hainan Province, Communist Party of China (CPC) Hainan Province Committee	The plan intended to further strengthen the protection of ecology and advance the ecological civilisation, to keep fighting pollution, to build high-quality national pilot zone for ecological conservation, and to win the battle against pollution in agricultural industry and in rural areas.
5	<i>Guiding Opinions on Actively Exploring Real-name Purchase and Quota-based Application of Chemical Fertilisers and Pesticides, and Further Promoting Usage Reduction on and Efficacy Enhancement of Chemical Fertilisers</i>	26 Oct., 2022	People's Government of Jiangsu Province	It made clear the overall requirements, key tasks and supporting measures in promoting real-name purchase and quota-based application of chemical fertilisers and pesticides in Jiangsu Province.



	<i>and Pesticides</i>			
6	<i>Work Plan for the Control of Emerging Pollutants in Hainan Province</i>	14 Nov., 2022	People's Government of Hainan Province	The plan assigned key tasks in controlling emerging pollutants for various provincial governmental departments.
7	<i>Work Plan for the Control of Emerging Pollutants in Sichuan Province</i>	16 Dec., 2022	People's Government of Sichuan Province	The plan is in line with the <i>Action Plan for the Control of Emerging Pollutants</i> , the <i>Action Plan for Winning the Battle for Protection & Restoration in the Yangtze River Basin</i> , and the <i>Action Plan for Ecology Protection & Management in the Yellow River Basin</i> .

Source:CCM



Registration

China approves 197 herbicide products in 2022

Summary: In 2022, MARA approved 197 new herbicide products, mainly of low toxicity. Popular active ingredients are glufosinate-ammonium, glyphosate and 2,4-D.

In 2022, the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) approved 197 new herbicide products, of which 17 are TC products and 6 are TK products. The formulation products are mainly in the forms of SL and EC. The majority of the nearly 200 products are of low toxicity. The most frequently used active ingredient is glufosinate-ammonium, which is present in 17 products. Major control targets are annual weeds, weeds and annual gramineous weeds.

TABLE 5: Form of newly-registered herbicide products in China in 2022

No.	Form	Number
1	SL	52
2	EC	36
3	OD	24
4	SC	19
5	WG	18
6	TC	17
7	SG	7
8	WP	7
9	TK	6
10	ME	4
	Others	7
	Total	197

Source: MARA

TABLE 6: Top 10 active ingredients used in the herbicide products approved in China in 2022

No.	Active ingredient	Number
1	Glufosinate-ammonium	17
2	Glyphosate	16
3	2,4-D	12
4	Chlorimuron-ethyl	8
5	MCPA	8
6	Cyhalofop-butyl	8
7	2,4-D-ethylhexyl	7
8	Flumioxazin	7
9	Metamifop	7
10	Clomazone	7

Source: MARA

Besides the top 10 active ingredients, glufosinate-p, haloxyfop-P-methyl, acetochlor and mesosulfuron-methyl are also quite popular.

Over 80% of the newly-registered herbicide products in 2022 are low toxic. Indeed, the pesticide industry in China is pursuing high-efficacy pesticides with low toxicity and less residues.

TABLE 7: Toxicity of newly-registered herbicide products in China in 2022

No.	Toxicity	Number
1	Low	161
2	Mild	32
3	Moderate	4
Total		197

Source: MARA



Trade analysis

Brazil and the US, major export destinations of China's herbicides TC in 2022

Summary: In 2022, China's herbicides TC export peaked in May. The top three active ingredients of the herbicides TC exported from China in this period were glyphosate, atrazine and 2,4-D, and the three biggest export destinations were Brazil, the US and Argentina. Sichuan Leshan Fuhua Tongda Agro-chemical Technology Co., Ltd. ranked the first in export volume of herbicides TC products.

According to the export data from Tranalysis, in 2022, China exported an estimated 522,317 tonnes of herbicide TC products. The herbicides TC export peaked in May. In this month, Sichuan Leshan Fuhua Tongda Agro-chemical Technology Co., Ltd. (now the Fuhua Tongda Chemical Co., Ltd.) exported the most herbicides TC products, major active ingredients being glyphosate and glufosinate-ammonium; the company's products mainly headed to Argentina. Still in May, the most popular export products were glyphosate TC products; the biggest destination was Brazil. It should be noted that during Sept.–Nov., export volume shrank fast since production in domestic pesticide enterprises suffered a setback due to a series of factors, such as workplace safety and environmental protection inspection, COVID resurgence and high temperature.

TABLE 8: Monthly export volume of herbicides TC from China, 2022

Month	100% AI volume, tonne
Jan.	49,354.858
Feb.	52,405.947
March	57,749.746
April	42,640.960
May	61,000.534
June	58,127.019
July	55,772.694
Aug.	55,322.276
Sept.	28,220.324
Oct.	13,975.894
Nov.	4,220.390
Dec.	43,526.422
Total	522,317.064

Note: The export volume of herbicides TC from China in Jan.–Nov. 2022 comes from the import and export data provided by Tranalysis, but the





export volume for Dec. 2022 is estimated.

Source:Tranalysis

A total of 47 active ingredients of herbicides TC were exported from China to major destinations in 2022. The top three active ingredients were glyphosate, atrazine and 2,4-D. Glyphosate TC products accounted for about 54% (calculation based on 100% AI, the same hereafter) of the total herbicide TC export volume from China in this period, atrazine TC products made up nearly 11% and 2,4-D TC products with some 8%.

Jiangsu Yangnong Chemical Co., Ltd. (Jiangsu Yangnong) exported the most glyphosate TC products in 2022, which were mainly exported to Brazil, the US and Argentina. In 2022, though its glyphosate TC lines did not operate at full steam, the lines were run stably, supported by ample orders.

Major export destinations of atrazine TC products from China also included Brazil, the US and Argentina.

TABLE 9: Active ingredients of the herbicides TC exported from China, 2022

No.	Active ingredient	100% AI volume, tonne
1	Glyphosate	280,923.366
2	Atrazine	55,107.626
3	2,4-D	39,627.911
4	Paraquat	27,902.729
5	Metolachlor	16,302.971
6	Dicamba	13,895.953
7	Glufosinate-ammonium	13,241.212
8	Clethodim	8,626.935
9	Mesotrione	6,248.071
10	Clomazone	5,715.658
	Others	54,724.630
	Total	522,317.064

Note:The export volume of herbicides TC from China in Jan.–Nov. 2022 comes from the import and export data provided by Tranalysis, but the export volume for Dec. 2022 is estimated.

Source:Tranalysis

In general, China exported herbicides TC to 56 major export destinations in 2022. Brazil was the biggest destination, its volume





accounting for some 28% of the total. Of the country's imported herbicides TC products from China, some 53% were glyphosate TC products. That is because Brazil's local glyphosate TC supply was in shortage, so it relied more on the supply from China.

TABLE 10: Major export destination of herbicides TC exported from China, 2022

No.	Major destination	100% AI volume, tonne
1	Brazil	146,840.157
2	The US	143,781.184
3	Argentina	101,842.109
4	Russia	23,144.108
5	India	19,900.929
6	Australia	12,552.924
7	Paraguay	11,768.321
8	Indonesia	8,995.505
9	Mexico	7,714.481
10	Nigeria	6,837.272
	Others	38,940.076
	Total	522,317.064

Note: The export volume of herbicides TC from China in Jan.–Nov. 2022 comes from the import and export data provided by Tranalysis, but the export volume for Dec. 2022 is estimated.

Source: Tranalysis



Brief news

Liaoning Cynda starts trial production of 1,500 t/a pesticide TC project

On 30 Dec. 2022, Shandong Cynda Chemical Co., Ltd. (Shandong Cynda) announced that the 200 t/a imazapic TC, 1,200 t/a imazethapyr TC and 100 t/a imazaquin TC production lines in its wholly-owned subsidiary Liaoning Cynda Chemical Co., Ltd. (Liaoning Cynda) had finished construction, equipment installation and commissioning. After passing expert review and acceptance, the lines have been put into trial production. It is expected that the project would expand Shandong Cynda's production of main products, optimise product structure, raise its profitability and competitiveness, and boost its business performance in future development.

Guizhou unveils second-batch approved chemical parks

On 28 Dec., the Department of Industry and Information Technology of Guizhou Province unveiled the second batch of approved chemical parks, including one chemical park and four newly-established chemical parks. According to Guizhou's regulation, a newly-established chemical park is required to obtain the identification of "chemical park" before allowing chemical projects in the park going into operation.

TABLE 11: Second batch of approved chemical park in Guizhou Province

No.	Chemical park	Location
1	Qiandongnan Tianzhu Chemical Industry Park	Qiandongnan Miao and Dong Autonomous Prefecture

Source: Department of Industry and Information Technology of Guizhou Province

TABLE 12: Second batch of approved newly-established chemical parks in Guizhou Province

No.	Chemical park	Location
1	Liupanshui Panbei Chemical Industry Park	Liupanshui City
2	Bijie Zhijin Chemical Industry Park	Bijie City
3	Guizhou Tongren Wanshan Chemical Industry Park	Tongren City
4	Xingren Modern Chemical Industry Park	Qianxinan Buyei and Miao Autonomous Prefecture

Source: Department of Industry and Information Technology of Guizhou Province

Inner Mongolia releases second batch of chemical parks to be approved

On 6 Jan., the Department of Industry and Information Technology of the Inner Mongolia Autonomous Region issued the second batch of chemical park to be approved, with 11 parks on the list.

TABLE 13: Second batch of chemical park to be approved in Inner Mongolia Autonomous Region

No.	Chemical park	Location
1	Jinqiao Industrial Park of Hohhot Jinshan High-tech Industrial Development Zone	Hohhot City
2	Tuoketuo Industrial Park of Inner Mongolia Hohhot Tuoqing Economic Development Zone	Hohhot City
3	Inner Mongolia Baotou Tuyou New Industrial Park	Baotou City
4	Yuanbaoshan Industrial Park of Inner Mongolia Chifeng High-tech Industrial Development Zone	Chifeng City
5	Hongshan Industrial Park of Inner Mongolia Chifeng High-tech Industrial Development Zone	Chifeng City
6	Dalate Industrial Park of Inner Mongolia Erdos Dalate Economic Development Zone	Erdos City
7	Duguitala Industrial Park and New Energy Industrial Park of Inner Mongolia Erdos Hangjin Economic Development Zone	Erdos City
8	Inner Mongolia Erdos Shanghaimiao Economic Development Zone	Erdos City
9	Inner Mongolia Bayannur Urad Rear Banner Industrial Park	Bayannur City
10	Urad Front Banner Industrial Park of Inner Mongolia Bayannur Imported Resources Processing and Development Zone	Bayannur City
11	Fengzhen Industrial Park of Inner Mongolia Ulanqab Fengchuan Circular Economy Development Zone	Ulanqab City

Source: Department of Industry and Information Technology of the Inner Mongolia Autonomous Region

Jiangsu Changqing to expand 5,000 t/a S-metolachlor TC project

On 13 Jan., Jiangsu Changqing Agrochemical Nantong Co., Ltd. (Jiangsu Changqing) publicised the risk assessment of social stability of its 5,000 t/a S-metolachlor TC expansion project. After completion, the project would form the production capacities of 5,000 t/a S-metolachlor TC (including 4,022 t/a 2-ethyl-6-methylaniline for self-use), 1,380 t/a by-product hydrochloric acid for self-use and 310 t/a sodium chloride.

Jiangxi Hetian to start 2,000 t/a tebuthiuron TC technology transformation project

On 13 Jan., the Xingan County Government publicised the Environmental Impact (EI) report of Jiangxi Hetian Technology Co., Ltd. (Jiangxi Hetian)'s 2,000 t/a tebuthiuron TC technology transformation project. In this project, measures will be taken to conduct the upgrading of raw material and production technique for the substitution and condensation of tebuthiuron (phase I), with the production capacity and technique including 2,000 t/a tebuthiuron, 600 t/a flumetralim, 200 t/a flumetsulam, 700 t/a 12.5% flumetralim EC, 600 t/a 25% flumetralim EC, 500 t/a 25% flumetralim SC, 100 t/a 80% flumetsulam WG and 300 t/a 20% tebuthiuron GR remained unchanged.

Hebei Veyong applies thermal cracking-ACA process in glufosinate production

On 16 Jan., Zhejiang Limin Holding Co., Ltd. said on the investor interaction platform that the 5,000 t/a glufosinate project of its wholly-



owned subsidiary, Hebei Veyong Bio-Chemical Co., Ltd. (Hebei Veyong), would be applied the thermal cracking-ACA (acrolein cyanohydrin acetate) process (the process). Boasting the cost-effective raw material consumption, high gross profit and safe and environmental-friendly production, the process could reduce the hazardous wastes by 4–5 tonnes and 2.5 tonnes during the production of each one tonne glufosinate, compared to the Grignard-Strecker route and the alchlor-based-Strecker route, respectively, with the generation of waste gas, waste water and industrial residue diminishing by 90% compared to the alchlor-based-Strecker route.

Huai'an Glory to construct 2,700 t/a pesticide expansion and transformation project

On 17 Jan., Jiangsu Flag Chemical Industry Co., Ltd. (FLAGCHEM) publicised the Environmental Impact Report of the 2,700 t/a pesticide expansion and transformation project of its wholly-owned subsidiary, Huai'an Glory Chemical Co., Ltd. (Huai'an Glory).

Huai'an Glory planned to expand the project in the existing factories at No. 2, Yannan Avenue, Huai'an Industrial Park. After completion, it is expected that the production capacities of chlorantraniliprole and metamifop would reach 1,500 t/a and 1,200 t/a, respectively.

Guangxi Weixun to build new herbicide, antibacterial agent and intermediate project

On 11 Jan., the Department of Ecology and Environment of Baise City accepted the application of the Environmental Impact Report of Guangxi Weixun Biotechnology Co., Ltd. (Guangxi Weixun)'s new herbicide, antibacterial agent and intermediate project.

Overview of the project:

- Construction site: Tiandong Petrochemical Industrial Park of Guangxi Province
- Construction content:
 - Phase I: Constructing production lines for 500 t/a clodinafop-propargyl, 2,500 t/a cyhalofop-butyl, 500 t/a 5-chloro-2,3-difluoropyridine and 1,000 t/a 3,4-difluorobenzonitrile;
 - Phase II: Constructing production lines for 300 t/a 2,2-difluoro-1,3-benzodioxole, 200 t/a fludioxonil, 250 t/a fenoxaprop-P-ethyl and 250 t/a metamifop;
 - Phase III: Constructing production lines for 1,000 t/a fluorobenzoyl chloride, 1,500 t/a 3,4-difluorobenzonitrile, 750 t/a 2,3,5-trichloropyridine, 1,000 t/a fluorobenzene, 1,000 t/a fluorotoluene, 2,500 t/a (R)-(+)-2-(4-hydroxyphenoxy)propionic acid, 250 t/a methyl (R)-2-(4-hydroxyphenoxy)propionate and 500 t/a 4-hydroxybenzophenone.

Zhejiang unveils first batch of chemical parks to be approved

On 17 Jan., the Economy and Information Technology Department of Zhejiang unveiled the first batch of chemical parks to be approved, with 18 chemical parks on the list.



TABLE 14: List of chemical parks to be approved in Zhejiang Province (the first batch)

No.	Chemical park	Location
1	Jiande Economic Development Zone Chemical Industry Park	Hangzhou City
2	Tianmu Pharmaceutical Port Chemical Industry Cluster Area	
3	Ningbo Daxie Development Zone	Ningbo City
4	Ningbo Petrochemical Economic and Technological Development Zone	
5	Dongtou Daxiaomen Lingang Petrochemical Industrial Area	Wenzhou City
6	Nanxun Economic Development Zone Linghu Chemical Industry Park	Huzhou City
7	Deqing Economic Development Zone New Materials Industrial Park	
8	Changxing Economic and Technological Development Zone Chengnan Industrial Functional Area	
9	Haining Economic Development Zone (Jianshan) Chemical New Materials Park	Jiaxing City
10	Tongxiang Zhouquan Chemical Industry Cluster	
11	Tongxiang Economic Development Zone Chemical Industry Cluster	
12	Jinhua Economic and Technological Development Zone Health Biological Industrial Park Chemical Industry Cluster	Jinhua City
13	Lanxi Economic Development Zone Chemical Industry Park	
14	Changshan Economic Development Zone Chemical Industry Cluster	Quzhou City
15	Jiangshan Economic Development Zone New Energy Materials Industrial Park	
16	Quzhou Zhizhao New City High-tech Zone	
17	Tiantai Economic Development Zone Chemical Industry Park	Taizhou City
18	Lishui Economic and Technological Development Zone Chemical Industry Park	Lishui City

Source: the Economy and Technology Department of Zhejiang Province

EU extends approval period of metsulfuron-methyl

On 17 Jan., the European Union (EU) released three regulations, aiming to extend the approval period of 14 active substances including oxamyl, dimoxystrobin, buprofezin, etc. The regulation, Commission Implementing Regulation (EU) 2023/114, took effect on 20 Jan., extending the approval period of metsulfuron-methyl to 31 March, 2024.



Metsulfuron-methyl, a broad-spectrum, selective and systemic translocated herbicide for wheat-growing areas, boasts the highest activity in the existing sulfonylurea herbicides. It can be applied to various types of soil to conduct pre-seedling soil treatment and post-seedling spraying on stem leaves against most broad-leaf weeds and gramineous weeds.





Price Update

Ex-works prices of key herbicide raw materials in China, 8 Jan., 2023

TABLE 15: Ex-works prices of key herbicide raw materials in China, 8 Jan., 2023

Raw Materials	20221208		20230108	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% Glycine	13,000	1,825.2	12,000	1,727.24
92% Iminodiacetonitrile	9,300	1,305.72	9,300	1,338.61
99% Isopropylamine	9,550	1,340.82	9,550	1,374.6
98% N-(Phosphonmethyl) Iminodiacetic acid	30,000	4,212	29,500	4,246.13
99% Phosphorus trichloride	7,710	1,082.49	7,563	1,088.59
99.9% Pyridine	42,000	5,896.81	42,000	6,045.34

Note: Ex-works price includes VAT.

Source: CCM

Ex-works prices of main herbicides in China, 8 Jan., 2023





TABLE 16: Ex-works prices of main herbicides in China, 8 Jan., 2023

Product	20221208		20230108	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
96% 2,4-D technical	23,000	3,229.2	24,000	3,454.48
92% Acetochlor technical	39,000	5,475.61	40,000	5,757.47
97% Atrazine technical	36,000	5,054.41	36,000	5,181.72
96% Bensulfuron-methyl technical	192,000	26,956.83	192,000	27,635.84
92% Butachlor technical	26,000	3,650.4	26,000	3,742.35
95% Clomazone technical	113,000	15,865.22	113,000	16,264.84
95% Cyhalofop-butyl technical	177,500	24,921.02	175,000	25,188.92
97% Diuron technical	48,000	6,739.21	50,000	7,196.83
98% Fenclorim technical	127,000	17,830.82	122,000	17,560.27
95% Fenoxaprop-P-ethyl technical	180,000	25,272.03	178,000	25,620.73
96% Fluroxypyr technical	173,000	24,289.22	165,700	23,850.31
95% Fomesafen technical	139,000	19,515.62	139,000	20,007.2
95% Glufosinate ammonium technical	187,600	26,339.07	155,000	22,310.18
95% Glyphosate technical	50,500	7,090.21	50,000	7,196.83
95% Haloxyfop-P-methyl technical	208,000	29,203.23	183,000	26,340.41
97% Metolachlor technical	57,500	8,073.01	59,500	8,564.23
95% Metsulfuron-methyl technical	135,000	18,954.02	135,000	19,431.45
95% Nicosulfuron technical	235,000	32,994.03	225,000	32,385.75
97% Oxyfluorfen technical	215,000	30,186.03	205,000	29,507.02
95% Pendimethalin technical	65,700	9,224.29	64,400	9,269.52
95% Pretilachlor technical	34,000	4,773.6	34,000	4,893.85
97% Pyrazosulfuron-ethyl technical	255,000	35,802.04	255,000	36,703.85





80% Quinclorac technical	147,100	20,652.86	151,000	21,734.44
95% Quizalofop-P-ethyl technical	235,000	32,994.03	227,500	32,745.59
95% Tribenuron-methyl technical	145,000	20,358.02	140,000	20,151.13
95% Trifluralin technical	38,000	5,335.21	42,000	6,045.34

Note: Ex-works price includes VAT.

Source: CCM

Shanghai port prices of main herbicides in China, 8 Jan., 2023



TABLE 17: Shanghai port prices of main herbicides in China, 8 Jan., 2023

Product	20221208		20230108	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
96% 2,4-D technical	23,500	3,299.4	24,500	3,526.45
92% Acetochlor technical	39,500	5,545.81	40,500	5,829.44
97% Atrazine technical	36,500	5,124.61	36,500	5,253.69
96% Bensulfuron-methyl technical	192,500	27,027.03	192,500	27,707.81
92% Butachlor technical	26,500	3,720.6	26,500	3,814.32
95% Clomazone technical	113,500	15,935.42	113,500	16,336.81
95% Cyhalofop-butyl technical	178,000	24,991.22	175,500	25,260.89
97% Diuron technical	48,500	6,809.41	50,500	7,268.8
98% Fenclorim technical	127,500	17,901.02	122,500	17,632.24
95% Fenoxaprop-P-ethyl technical	180,500	25,342.23	178,500	25,692.7
96% Fluroxypyr technical	173,500	24,359.42	166,200	23,922.27
95% Fomesafen technical	139,500	19,585.82	139,500	20,079.17
95% Glufosinate ammonium technical	188,100	26,409.27	155,500	22,382.15
95% Glyphosate technical	51,000	7,160.41	50,500	7,268.8
95% Haloxyfop-P-methyl technical	208,500	29,273.43	183,500	26,412.38
97% Metolachlor technical	58,000	8,143.21	60,000	8,636.2
95% Metsulfuron-methyl technical	135,500	19,024.22	135,500	19,503.42
95% Nicosulfuron technical	235,500	33,064.23	225,500	32,457.72
97% Oxyfluorfen technical	215,500	30,256.23	205,500	29,578.99
95% Pendimethalin technical	66,200	9,294.49	64,900	9,341.49
95% Pretilachlor technical	34,500	4,843.8	34,500	4,965.82
97% Pyrazosulfuron-ethyl technical	255,500	35,872.24	255,500	36,775.82





80% Quinclorac technical	147,600	20,723.06	151,500	21,806.41
95% Quizalofop-P-ethyl technical	235,500	33,064.23	228,000	32,817.56
95% Tribenuron-methyl technical	145,500	20,428.22	140,500	20,223.1
95% Trifluralin technical	38,500	5,405.41	42,500	6,117.31

*Note: Port price equals the ex-works price plus the transport fee from the factory to the port, and the ex-works price includes VAT.
Source: CCM*

FOB Shanghai prices of main herbicides in China, 8 Jan., 2023



TABLE 18: FOB Shanghai prices of main herbicides in China, 8 Jan., 2023, USD/t

Product	20221208	20230108
96% 2,4-D technical	3,289.15	3,169.25
92% Acetochlor technical	5,473.72	5,282.08
97% Atrazine technical	4,890.12	4,585.59
96% Bensulfuron-methyl technical	26,363.72	25,353.98
92% Butachlor technical	3,698.76	3,433.35
95% Clomazone technical	15,577.38	14,921.87
95% Cyhalofop-butyl technical	23,526.07	22,291.08
97% Diuron technical	6,702.55	6,602.6
98% Fenclorim technical	17,488.89	16,110.34
95% Fenoxaprop-P-ethyl technical	24,725.29	23,505.25
96% Fluroxypyr technical	23,769.54	21,881.01
95% Fomesafen technical	19,127.32	18,355.23
95% Glufosinate ammonium technical	24,856.27	19,743.53
95% Glyphosate technical	7,664.44	7,196.83
95% Haloxyfop-P-methyl technical	28,548.29	24,165.51
97% Metolachlor technical	7,999.64	7,857.09
95% Metsulfuron-methyl technical	18,581.17	17,827.02
95% Nicosulfuron technical	32,234.76	29,711.7
97% Oxyfluorfen technical	28,464.92	26,112.4
Paraquat 42% TK	3,767.03	3,499.38
95% Pendimethalin technical	9,119.23	8,504.15
95% Pretilachlor technical	4,791.05	4,489.77
97% Pyrazosulfuron-ethyl technical	34,965.48	33,673.26





80% Quinclorac technical	20,233.26	19,939.85
95% Quizalofop-P-ethyl technical	32,234.76	30,041.83
95% Tribenuron-methyl technical	19,946.53	18,487.28
95% Trifluralin technical	5,153.53	5,349.86

Note: FOB price is calculated based on ex-works price, and tax refund and exchange rate were taken into account.

Source: CCM

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