

# Herbicides China Monthly Report 202310

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## Headline

In early Oct., domestic demand for herbicides TC saw little improvement. Prices of the majority of herbicides either decreased or kept stable. Of the main herbicides TC CCM investigated, atrazine TC, quizalofop-P-ethyl TC, pretilachlor TC, metolachlor TC, glyphosate TC and diquat TK experienced MoM decrease in their price.

In late Oct., herbicide TC market was rather stable due to low purchase willingness and weak demand. It is believed that chances for price surges are slim in the short term.

Shoujian Technology has planned to upgrade its existing acetochlor TC (methylene method) production facilities to promote healthy development of its business. After the upgrading project, the company's total acetochlor TC capacity will decrease slightly from 9,320 t/a to 9,000 t/a.

Jiangsu Yongkai has dismantled its clodinafop-propargyl TC line in the plant located in the Lianyungang Chemical Industrial Park in Jiangsu Province. However, it should be minded that the company has set up clodinafop-propargyl TC production line in its subsidiary Gansu Liankai.

Jiangxi Zhonghe has planned to build 2,000 t/a production capacity for tembotrione TC and become a new player in the tembotrione market.

On 8 Oct., 2023, Hangzhou government issued the Work Plan for Rectification of Chemical Manufacturing Enterprises Located outside Chemical Parks in Hangzhou City, to promote optimisation of the city's chemical industrial landscape, deepen transformation and upgrade, and facilitate green development.

In the first three quarters of 2023, altogether 268 herbicide products were approved of pesticide registration in China, which include 23 TC products and 4 TK products. Popular forms of these products are OD, EC, SL and SC. The majority of them are of low toxicity.

In early Oct., the price of paraquat in China was stable, and the price of pyridine had a 4.69% MoM increase, which is pretty much in line with the previous projection. Slight increases in the price of the two products are expected in the short term.

The chemical industry standard 2,3-Dichloro-5-(trifluoromethyl)pyridine for Industrial Use, formulation of which was led by Nanjing Red Sun, passed review by the Subcommittee on Organic Chemical of National Technical Committee on Chemistry of Standardisation Administration of China during 10–11 Oct., 2023. The company will go deeper along the industrial chains of pyridine, pyridine downstream products and pyridine-related products, and at the same time will help improve product quality standard system of pyridine and pyridine derivatives in China.

In July–Aug. 2023, China's herbicide formulations were mainly exported to Brazil, Australia, Indonesia, etc.; the export volume jumped by 12.39% YoY. Meanwhile, the import volume of herbicide formulations to China also increased, up by 69.02% YoY, and a great majority of these products were imported from Malaysia.







### Editor's note

In early Oct., domestic demand for herbicides TC saw little improvement as buyers were rather inactive in purchase. In late Oct., weak market continued and prices of the majority of herbicides TC remained rather stable, except for a slight increase in the price of diuron TC due to contraction of supply.

As regards company dynamics, Shoujian Technology has planned to slightly cut its existing acetochlor TC capacity, Jiangxi Zhonghe has planned to build 2,000 t/a tembotrione TC production capacity, and Hubei Changqing has planned to build capacity for a key intermediate of amide herbicides, while Jiangsu Yongkai has dismantled its clodinafop-propargyl TC line in its Jiangsu plant. Besides, FLAGCHEM's subsidiary Anhui Neotec Co., Ltd. acquired an invention patent on a synthesis method for a key intermediate of saflufenacil, and the chemical industry standard 2,3-Dichloro-5-(trifluoromethyl)pyridine for Industrial Use passed expert review, formulation of which was led by Nanjing Red Sun.

In Q1–Q3 2023, altogether 268 herbicide products were approved of pesticide registration in China, which include 23 TC products and 4 TK products. Popular forms of these herbicide products are OD, EC, SL and SC. The majority of them are of low toxicity.

*The USD/CNY exchange rate in this newsletter is USD1.00 = CNY7.1789 on 9 Oct., 2023, sourced from the People's Bank of China. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.*





## Market analysis

### Half of main herbicides TC have MoM price drops in early Oct.

Summary: In early Oct., domestic demand for herbicides TC saw little improvement. Prices of the majority of herbicides either decreased or kept stable. Of the main herbicides TC CCM investigated, atrazine TC, quizalofop-P-ethyl TC, pretilachlor TC, metolachlor TC, glyphosate TC and diquat TK experienced MoM decrease in their price.

In early Oct., domestic demand for herbicides TC saw little improvement as buyers were rather inactive in purchase. In general, prices of the majority of herbicides either decreased or kept stable. Of the main herbicides TC CCM investigated, although acetochlor TC and diuron TC saw small MoM increase in the price, atrazine TC, quizalofop-P-ethyl TC, pretilachlor TC, metolachlor TC, glyphosate TC and diquat TK experienced MoM decrease in their price.

**Triazine herbicides:** Ametryn TC had stable price, while atrazine TC had another 7.89% MoM price decrease. Most atrazine TC producers have operated at a low level. Despite the normal supply, transactions were small in the slack season. It is expected that overall supply is sufficient to meet downstream demand and the price of atrazine TC would keep stable.

**Sulfonylurea herbicides:** The prices of nicosulfuron TC and bensulfuron-methyl TC were steady in early Oct., but the price of quizalofop-P-ethyl TC slipped by 3.90% MoM. The price drop was mainly the result of slack demand, and such a trend is expected to continue in the near future.

**Organophosphorus herbicides:** Glufosinate-ammonium TC had a stable price, while glyphosate TC saw the price decline by 6.15% MoM. Glyphosate TC price has kept falling since Sept. Although demand for the product has shrunk, glyphosate producers have been quite firm in maintaining the price at current level at least, and thus it is estimated the price will be stable in the short term.

Besides, the ex-works price of florasulam TC was stable. The diuron TC price edged up 0.79% MoM in early Oct., mainly supported by raw material price. The price of diuron TC is expected to stabilise, as domestic demand has been slack. The diquat TK market remained weak, and the price dropped by 4.00% in early Oct. Yet the continuously recovering price of the raw material pyridine leaves narrower room for price cut. It is believed that diquat TK price would keep stable for a short while.





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

Category	Product	Content of active ingredient	Ex-works price in early Oct., RMB/t	USD/t	MoM change (based on RMB price)
Triazine herbicide	Atrazine TC	97%	30,000	4,178.91	Down
	Ametryn TC	95%	44,500	6,198.72	Basically flat
Sulfonylurea herbicide	Nicosulfuron TC	95%	188,000	26,187.86	Basically flat
	Quizalofop-P-ethyl TC	95%	185,000	25,769.96	Down
	Bensulfuron-methyl TC	96%	160,000	22,287.54	Basically flat
Amide herbicide	Pretilachlor TC	95%	31,900	4,443.58	Down
	Acetochlor TC	92%	28,800	4,011.76	Up
	Metolachlor TC	97%	42,000	5,850.48	Down
Organophosphorus herbicide	Glufosinate-ammonium TC	95%	62,100	8,650.35	Basically flat
	Glyphosate TC	95%	30,500	4,248.56	Down
Triazolopyrimidine sulfonamide herbicide	Florasulam TC	98%	457,900	63,784.15	Basically flat
Bipyridinium herbicide	Diquat TK	40%	24,000	3,343.13	Down
Substituted phenylurea herbicide	Diuron TC	97%	38,300	5,335.08	Up

Source:CCM

### Prices of herbicides TC stabilise in late Oct.

Summary: In late Oct., herbicide TC market was rather stable due to low purchase willingness and weak demand. It is believed that chances for price surges are slim in the short term.

In late Oct., herbicide TC market was rather stable due to low purchase willingness and weak demand. Of the main herbicides TC CCM investigated, the majority of the products had seen steady price, except for a slight increase in the price of diuron TC due to contraction in the supply. It is believed that big fluctuations in herbicide TC prices are unlikely in the short term.

**Triazine herbicides:** Production costs had little change as prices of the intermediates isopropylamine, cyanuric chloride and ethylamine kept stable. For atrazine TC, it has been in an off season. Despite the dull demand in the market, its price basically stabilised.





**Sulfonylurea herbicides:** The prices of nicosulfuron TC and bensulfuron-methyl TC remained stable. For quizalofop-P-ethyl TC, exports have improved, and it is expected that its price will go up in the near future.

**Organophosphorus herbicides:** The prices of glufosinate-ammonium TC and glyphosate TC kept stable under weak demand. It is worth mentioning that the price of glufosinate-P TC declined, against the backdrop that China has seen growing new glufosinate-P formulation projects and intensified competition has forced price downtrend in glufosinate-P TC.

Besides, the price of florasulam TC was basically stable in late Oct. The diquat TK price dropped on a monthly basis as little improvement in the demand was seen and trade was not large. In H2 Oct., the raw material pyridine stayed static in price, and production costs had little change. Thus the diquat TK price remained at early-Oct. level. The diuron TC price edged up a little on a monthly basis; the price might increase in the short run due to production suspension in certain producers, even though the demand remains slack.







TABLE 2: Ex-works prices of main herbicides TC in late Oct. 2023

Category	Product	Content of active ingredient	Ex-works price in late Oct., RMB/t	USD/t	MoM change (based on RMB price)
Triazine herbicide	Atrazine TC	97%	30,000	4,178.91	Basically flat
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Organophosphorus herbicide	Glufosinate-ammonium TC	95%	62,100	8,650.35	Basically flat
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Triazolopyrimidine sulfonamide herbicide	Florasulam TC	98%	457,900	63,784.15	Basically flat
Bipyridinium herbicide	Diquat TK	40%	24,000	3,343.13	Down
Substituted phenylurea herbicide	Diuron TC	97%	38,800	5,404.73	Up

Source:CCM





## Company and supply

### Shoujian Technology to adjust its acetochlor TC capacity

Summary: Shoujian Technology has planned to upgrade its existing acetochlor TC (methylene method) production facilities to promote healthy development of its business. After the upgrading project, the company's total acetochlor TC capacity will decrease slightly from 9,320 t/a to 9,000 t/a.

In Oct., CCM learned from Shoujian Technology Co., Ltd. (Shoujian Technology, formerly known as Qiaochang Agricultural Services Co., Ltd.) that it had planned to launch a 9,000 t/a methylene method acetochlor TC production equipment technological upgrading project. Currently, Shoujian Technology has a 9,320 t/a methylene method acetochlor TC production line in its plant, which was put into operation long ago. After completion of the proposed upgrading project, the company's total acetochlor TC capacity will decrease to 9,000 t/a; the methylene method will still be adopted in the new line.

Shoujian Technology, located in the accredited Bingcheng Chemical Industrial Park, Binzhou City, Shandong Province, is a wholly-owned subsidiary of Shoujian Agriculture Group Co., Ltd. (Shoujian Agriculture). Besides the acetochlor TC capacity, the company also has active capacity of 3,000 t/a pretilachlor TC, 600 t/a dimethachlor TC, 1,000 t/a clethodim TC, 1,500 t/a oxyfluorfen TC, 3,000 t/a metolachlor TC, 200 t/a alachlor TC, 8,000 t/a atrazine TC, 280 t/a butachlor TC, 200 t/a propisochlor TC and 2,000 t/a 2,6-diethyl-N-(2-propoxyethyl)aniline. With this large capacity for such a variety of amide herbicides, it is no wonder that Shoujian Technology is one of the major amide herbicide producers in China.

It is worth noting that the plant in the Bingcheng Chemical Industrial Park, with all the existing active production facilities now owned by Shoujian Technology, was once possessed and run by Shandong Qiaochang Chemical Co., Ltd. (Shandong Qiaochang), which is also a subsidiary of Shoujian Agriculture. To better serve the planning of the parent company, Shoujian Technology acquired the assets and thus owned the business management right after negotiations.

Acetochlor, an amide herbicide being on the market for quite a long while, still enjoys respectable market shares. At present, the huge capacity for the product makes it in an advantageous position in the pesticide market in China. In recent years, though some pesticide enterprises have phased out their out-dated large-scale acetochlor TC capacity for the concern including environmental protection, production safety, industrial policies and adjustments to company's industry structure, many others have been active in promoting healthy development of the acetochlor TC industry. Right now, many domestic pesticide enterprises have large-scale acetochlor TC production facilities, which adopt clean production methods allowed by national policies. Besides Shoujian Technology, other representatives of these clean-method acetochlor TC producers include: Nantong Jiangshan Agrochemical & Chemicals Co., Ltd. (with 14,000 t/a acetochlor TC capacity), Hangzhou Nutrichem Co., Ltd. (3,000 t/a), Zhongnongfa Henan Agrochemical Co., Ltd. (10,000 t/a), Shandong Zhongshi Pesticide Co., Ltd. (20,000 t/a), Jiangsu Changlong Agrochemical Co., Ltd. (10,000 t/a) and Anhui Futian Agrochemical Co., Ltd. (4,000 t/a).

### Jiangsu Yongkai's clodinafop-propargyl TC line in Jiangsu base dismantled





Summary: Jiangsu Yongkai has dismantled its clodinafop-propargyl TC line in the plant located in the Lianyungang Chemical Industrial Park in Jiangsu Province. However, it should be minded that the company has set up clodinafop-propargyl TC production line in its subsidiary Gansu Liankai.

In Oct., CCM learned from Jiangsu Yongkai Chem Co., Ltd. (Jiangsu Yongkai) that resumption of its production lines for mefenpyr-diethyl, (R)-2-(4-((6-chlor-2-benzoxazolyloxy)-phenoxy) propanoic acid and fenoxaprop-P-ethyl TC in its plant located in the Lianyungang Chemical Industrial Park, Lianyungang City, Jiangsu Province, had been approved by local government, after long-term suspension, rectification and tedious approval procedures. In this period, however, the company chose to dismantle its clodinafop-propargyl TC line in the same plant.

Jiangsu Yongkai, along with other chemical enterprises in the same park, was ordered to suspend production completely and go through rectification starting from 28 April, 2018, soon after pollution cases in the Lianyungang Chemical Industrial Park were exposed by authoritative media. At that time, Jiangsu Yongkai had production capacity of 1,000 t/a (R)-2-(4-((6-chlor-2-benzoxazolyloxy)-phenoxy) propanoic acid, 1,000 t/a 2,4,6-tri-(6-aminocaproic acid)-1,3,5-triazine, 300 t/a mefenpyr-diethyl, 800 t/a fenoxaprop-P-ethyl TC, 600 t/a clodinafop-propargyl TC, and capacity for some other pesticide TC and intermediate products.

Although Jiangsu Yongkai was proactive in aligning with requirements to facilitate early resumption, the road became rather bumpy particularly after the severe explosion in the Xiangshui Ecological Chemical Park in Xiangshui County of Jiangsu Province on 21 March, 2019. The Xiangshui Ecological Chemical Park, at one bank of the estuary of Guanhe River, was just separated from the Lianyungang Chemical Industrial Park by a river. The explosion led to a chain of policies requiring deeper rectifications to deliver better results on environmental protection as well as on workplace safety, and thus not only delayed production resumption in the Lianyungang park, but also forced more extensive closure of chemical enterprises in the park.

Of course, Jiangsu Yongkai did not confine its attentions to the Jiangsu base in the suspension period. In fact, it decided to build another production plant in the central and western China. After careful investigations and discussions, the company established the subsidiary Gansu Liankai Biotechnology Co., Ltd. (Gansu Liankai) in the Hexipu Circular Economy Chemical Industrial Park, Yongchang County, Jinchang City, Gansu Province. So far, Gansu Liankai has had active production capacity of 1,200 t/a (R)-2-(4-((6-chlor-2-benzoxazolyloxy)-phenoxy) propanoic acid, 800 t/a 2-methyl-4-(trifluoromethyl)thiazole-5-carboxylic acid, 1,000 t/a 3,4-difluorobenzonitrile, 500 t/a thifluzamide TC, 600 t/a clodinafop-propargyl TC, 1,000 t/a cyhalofop-butyl TC, 500 t/a fluroxypyr-meptyl TC.

Considering the uncertainty of resumption in the Jiangsu base as well as the built and to-be-built production capacity in Gansu Liankai, Jiangsu Yongkai decided to focus its rectification efforts on certain lines—300 t/a mefenpyr-diethyl, 1,000 t/a (R)-2-(4-((6-chlor-2-benzoxazolyloxy)-phenoxy) propanoic acid, 800 t/a fenoxaprop-P-ethyl TC, while dismantle the lines of 1,000 t/a 2,4,6-tri-(6-aminocaproic acid)-1,3,5-triazine and 600 t/a clodinafop-propargyl TC. It is worth noting that Gansu Liankai's clodinafop-propargyl TC capacity actually made up for the capacity elimination in Jiangsu Yongkai, and thus the company still holds its position in the clodinafop-propargyl TC market.





Moreover, Jiangsu Yongkai has launched a 6,000 t/a fenoxaprop-P-ethyl 10% EC project to better utilise its Jiangsu base and serve its long-term development plan, after analysing pesticide market trend and related policies. This project will add 6,000 t/a production capacity for fenoxaprop-P-ethyl 10% EC product in its Jiangsu plant. Gansu Liankai has also proposed to build production lines of 1,000 t/a mefenacet TC, 1,000 t/a bentazone TC, 4,000 t/a MCPA TC, 1,500 t/a MCPA-sodium TC, 1,000 t/a MCPA-isooctyl TC, 1,000 t/a (R)-(+)-2-(4-hydroxy phenoxy)propionic acid, 600 t/a 2,3,6-trichloropyridine, 800 t/a pentachloropyridine, 800 t/a fenoxaprop-P-ethyl TC, 500 t/a isoxaflutole TC, 500 t/a prothioconazole TC, etc.; these lines are either under construction or to be constructed.

### **Jiangxi Zhonghe Biotechnology plans to build 2,000 t/a tembotrione TC capacity**

Summary: Jiangxi Zhonghe has planned to build 2,000 t/a production capacity for tembotrione TC and become a new player in the tembotrione market.

On 12 Oct., Jiangxi Zhonghe Biotechnology Co., Ltd. (Jiangxi Zhonghe Biotechnology) revealed that it had acquired recordation certificate for the investment project—tembotrione and other products production line transformation and expansion project. Recordation information shows that the project will construct production capacity of 2,000 t/a tembotrione TC, 100 t/a phenylacetic acid, 2,000 t/a metamifop TC, 300 t/a potassium hexafluorophosphate and 300 t/a isoxazolecarboxylic acid.

Jiangxi Zhonghe Biotechnology, located in the Xinghuo Industrial Park, Yongxiu County, Jiujiang City, Jiangxi Province, is a subsidiary of Jiangxi Zhonghe Chemical Co., Ltd. It now boasts production capacity of 500 t/a carfentrazone-ethyl TC, 1,000 t/a sulfentrazone TC, 2,000 t/a tebuthiuron TC, etc. This time, the new project, a response to the new dynamics in the pesticide market, will not only serve the overall development plan of its parent company, but also help to enrich its product diversity and pursue its own long-term development goal.

Tembotrione is a novel triketone herbicide; it is a broad-spectrum systematic herbicide with good safety profile. Tembotrione compound patent expired in Sept. 2019 in China, which removes a major barrier for Chinese pesticide enterprises to entering the market. Although China's tembotrione industry is still in its initial stage, the product now attracts much attention with its good product performance and the huge potential market. Indeed, recent years have seen many domestic companies coming to join the competition. Anhui Jiuyi Agriculture Co., Ltd., for instance, has already put its 200 t/a tembotrione TC production line into operation in its plant in the Hefei Circular Economy Demonstration Park, Hefei City, Anhui province. Now the company is pushing ahead with a tembotrione capacity expansion plan.

Besides, data from the China Crop Protection Industry Association (CCPIA) show that Chinese pesticide producers such as Limin Chemical Co., Ltd., Hebei Lansheng Biotech Co., Ltd., Liaoning Tianyi Pesticide Chemical Co., Ltd., Shandong Hailir Chemicals Co., Ltd. and Zhejiang Zhongshan Chemical Industry Group Co., Ltd. have so far revealed their tembotrione TC capacity building plans. China will see fast growth of tembotrione capacity in the near future, as the planned large-scale new capacity, including Jiangxi Zhonghe Biotechnology's 2,000 t/a, is completed.

It is worth mentioning that mesotrione, also a triketone herbicide, has the same mechanism of herbicidal action as tembotrione, with lower safety performance and herbicidal activity than the latter though. Currently, competition in China's mesotrione industry is intense. Active





mesotrione TC producers in China include Shandong Binnong Technology Co., Ltd., Shangyu Nutrichem Co., Ltd., Zhangye Dagong Pesticide Chemistry Co., Ltd., Jiangsu Youjia Crop Protection Co., Ltd., Shenyang Sciencreat Chemicals Co., Ltd., Zhejiang Zhongshan Chemical Industry Group Co., Ltd. and Limin Chemical Co., Ltd. Some of these mesotrione TC producers have planned to launch tembotrione projects.

For the short term, tembotrione will not have great impact on the mesotrione market in China. Yet it is believed that tembotrione will grow into one of the biggest rivals to mesotrione, considering the potential rapid growth. In the future, when some domestic pesticide enterprises have capacity for both products at the same time, they could make up for mesotrione TC sales decline by expanding tembotrione TC sales.







## Policy

### Hangzhou rolls out rectification plan targeting chemical producers located outside chemical parks

Summary: On 8 Oct., 2023, Hangzhou government issued the *Work Plan for Rectification of Chemical Manufacturing Enterprises Located outside Chemical Parks in Hangzhou City*, to promote optimisation of the city's chemical industrial landscape, deepen transformation and upgrade, and facilitate green development.

On 8 Oct., 2023, Hangzhou government issued the *Work Plan for Rectification of Chemical Manufacturing Enterprises Located outside Chemical Parks in Hangzhou City*, to promote optimisation of the city's chemical industrial landscape, deepen transformation and upgrade, and facilitate green development. The document will also help lift levels of workplace safety and of pollution prevention & treatment in the chemical industry, effectively guard against as well as reduce environmental risks posed by and safety loopholes in such chemical production companies, and encourage these producers to move into chemical parks. The Plan will come into effect on 1 Nov., 2023, with a valid period of five years.

The Work Plan sets out overall goals, lays down basic principles and work requirements, draws up schedule and gives out safeguard measures. Specifically, concerning work requirements, it says that the rectification targets manufacturing enterprises of hazardous chemicals as well as chemical enterprises dealing with chemical synthesis reactions that are located outside existing chemical parks in Hangzhou City. The government requires investigating current situation of such kind of enterprises one by one, and then forming opinions and working out rectification plans for each company, after classifying these companies into four categories—to be relocated into parks, to go through intensified rectification, to go through general rectification, and to be closed.

Rectification efforts for the four categories are as follows:

- Enterprises to be relocated into parks: Such enterprises are mainly hazardous chemical producers involved in chemical synthesis reaction processes. Before Oct. 2027, these companies (except for industrial gas suppliers) should be relocated into chemical parks. Moreover, for the existing companies, building new chemical projects or chemical transformation/expansion projects is not allowed, but launching projects to improve safety, environmental protection, energy conservation and intelligent performance is an exception.
- Enterprises to go through intensified rectification: Such enterprises mainly consist of chemical production companies that are listed as major sources of environmental risks, regarded as major hazard installations, located within 1km-range to environment sensitive areas such as drinking water source reserve areas, or rated at D-level for two years in a row in the comprehensive evaluation of economic benefits per mu (in this evaluation mechanism, D-level means rectification must be forced on the company due to poor economic benefits). Before June 2024, these companies should improve levels of workplace safety and environmental protection in accordance with related regulations. And in the process, their technological upgrading projects must not increase security risks and emission of major pollutants. Besides, these companies are encouraged to move into chemical parks.
- Enterprises to be closed: Governments at district level, county level and city level should, taking into full account of their needs of optimising regional chemical industrial layout and fostering better development of the industrial chain, step up efforts to lead chemical manufacturing enterprises located outside parks to cluster together or relocate into parks and upgrade their production facilities. As regards backward capacity in the chemical industry, the governments should order companies to eliminate it in compliance with laws and regulations, or be determined to close chemical enterprises that cannot deliver a satisfactory result after rectification.
- Enterprises to go through general rectification: This category covers chemical producers that are off the range of the previous three categories. Before the end of 2023, they should do a good job in investigating and rectifying hidden dangers in their protection and control facilities against safety and environmental risks.





Safeguard measures given in the Work Plan are:

- First, leadership should be strengthened. Hangzhou will form a special working group with staff from ecological environment bureau, bureau of economy and information technology and emergency management bureau at municipal level. This working group will be responsible for pushing ahead with this rectification work. At lower levels, working groups will also be set up, and government agencies in charge and taking accountability be made clear. A mechanism to promote and coordinate the work will be established.
- Second, supervision should be strengthened. A mechanism concerning regular work scheduling, progress tracking and analysis, briefing and supervision will be set up.
- Third, cross-department coordination should be strengthened. Synergy will be developed with reinforced collaboration among related departments and agencies, as well as active participation of parties involved.
- Fourth, policy support should be strengthened. Local governments should make good use of policies on multiple aspects—fiscal, financial, tax revenue, human resources and social security, eco-environment, etc. Difficulties and problems encountered in business closure, company relocation and other processes should be coped with properly. Related enterprises are encouraged to transform and upgrade with government support.





## Registration

### 268 Herbicide products approved of registration in Q1–Q3 2023

Summary: In the first three quarters of 2023, altogether 268 herbicide products were approved of pesticide registration in China, which include 23 TC products and 4 TK products. Popular forms of these products are OD, EC, SL and SC. The majority of them are of low toxicity.

As of 28 Sept., the Department of Agrochemical Management of the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) had approved registration of 268 herbicide products in the first three quarters of 2023. The great majority of the products are of low toxicity, and popular forms of formulation products are OD, EC, SL and SC. These approved herbicide products include 23 TC products and 4 TK products.

In Q1–Q3 2023, altogether eight registrants have at least five herbicide products approved of registration; of them, Shandong Weifang Rainbow Chemical Co., Ltd. (Weifang Rainbow) ranks first with 26 herbicide products approved, followed by Shandong Binnong Technology Co., Ltd. with 14 approved and Zenenorva Crop Protection (Anhui) Co., Ltd. with 13. As regards export-only herbicide products, Weifang Rainbow has 22 such herbicide products approved, the number accounting for almost 40% of the total 58 approved in this period.

**TABLE 3:** Herbicide products approved of registration by toxicity, Q1–Q3 2023

No.	Toxicity	Number
1	Low	247
2	Mild	18
3	Moderate	3
<b>Total</b>		<b>268</b>

Source: MARA



**TABLE 4:** Herbicide products approved of registration by form, Q1–Q3 2023

No.	Form	Number
1	OD	64
2	EC	56
3	SL	44
4	SC	34
5	TC	23
6	ME	15
7	SE	6
8	WG	6
9	SP	5
10	TK	4
Others		11
<b>Total</b>		<b>268</b>

Source: MARA

**TABLE 5:** Registrants with at least five herbicide products approved of registration, Q1–Q3 2023

No.	Registrant	Number
1	Shandong Weifang Rainbow Chemical Co., Ltd.	26
2	Shandong Binnong Technology Co., Ltd.	14
3	Zenenorva Crop Protection (Anhui) Co., Ltd.	13
4	Jilin Jinqiu Pesticide Co., Ltd.	8
5	Anhui Jintudi Biotechnology Co., Ltd.	7
6	Shandong Aokun Crop Science Co., Ltd.	5
7	Anhui Lantian Agricultural Development Co., Ltd.	5
8	Anhui Huaxing Chemical Industry Co., Ltd.	5

Source: MARA



TABLE 6: Herbicide TC products approved of registration, Q1–Q3 2023

No.	Registration No.	Registrant	Active ingredient & content
1	PD20230330	Jiangsu Flag Chemical Industry Co., Ltd.	95% Pinoxaden
2	EX20230110	Jiangsu Repons Agrochemical Co., Ltd.	95.5% Carfentrazone-ethyl
3	EX20230147	Jiangsu Flag Chemical Industry Co., Ltd.	97% Isoxaflutole
4	EX20230046	Lier Chemical Co., Ltd.	93% Nicosulfuron
5	EX20230123	Lier Chemical Co., Ltd.	98% Triclopyr-butotyl
6	EX20230152	Weifang Cynda Chemical Co., Ltd.	98% Imazapyr
7	EX20230031	Shandong Weifang Rainbow Chemical Co., Ltd.	98% Chloridazon
8	PD20230413	Zhejiang Avilive Chemical Co., Ltd.	95% Aminopyralid
9	PD20230206	Hunan Lier Biotechnology Co., Ltd.	90% Glufosinate-P
10	PD20230402	Shaanxi Meibang Pharmaceutical Group Co., Ltd.	90% Glufosinate-P
11	PD20230482	Guang'an Lier Chemical Co., Ltd.	90% Glufosinate-P
12	PD20230363	Jiangsu Agrochem Laboratory Co., Ltd.	94% Foramsulfuron
13	EX20230130	Jiangsu Repons Agrochemical Co., Ltd.	96% Sulfentrazone
14	EX20230034	Weifang Sino-Agri Union Chemical Co., Ltd.	98% Pyrasulfotole
15	PD20230346	Limin Chemical Co., Ltd.	97% Tembotrione
16	EX20230040	Shandong Weifang Rainbow Chemical Co., Ltd.	97% Fluorochloridone
17	EX20230049	Weifang Sino-Agri Union Chemical Co., Ltd.	96% Dimethenamid-P
18	PD20230159	Synwill (Nantong) Chemical Co., Ltd.	96% Metamifop
19	PD20230337	Jiangsu Flag Chemical Industry Co., Ltd.	96% Metamifop
20	EX20230032	Shandong Weifang Rainbow Chemical Co., Ltd.	98% Butoxydim
21	PD20230183	Shandong Aokun Crop Science Co., Ltd.	98% Topramezone
22	PD20230410	Jingbo Agrochemicals Technology Co., Ltd.	97% Topramezone
23	PD20230461	Anhui Fengle Agrochemical Co., Ltd.	97% Topramezone

Source: MARA

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### Paraquat and pyridine

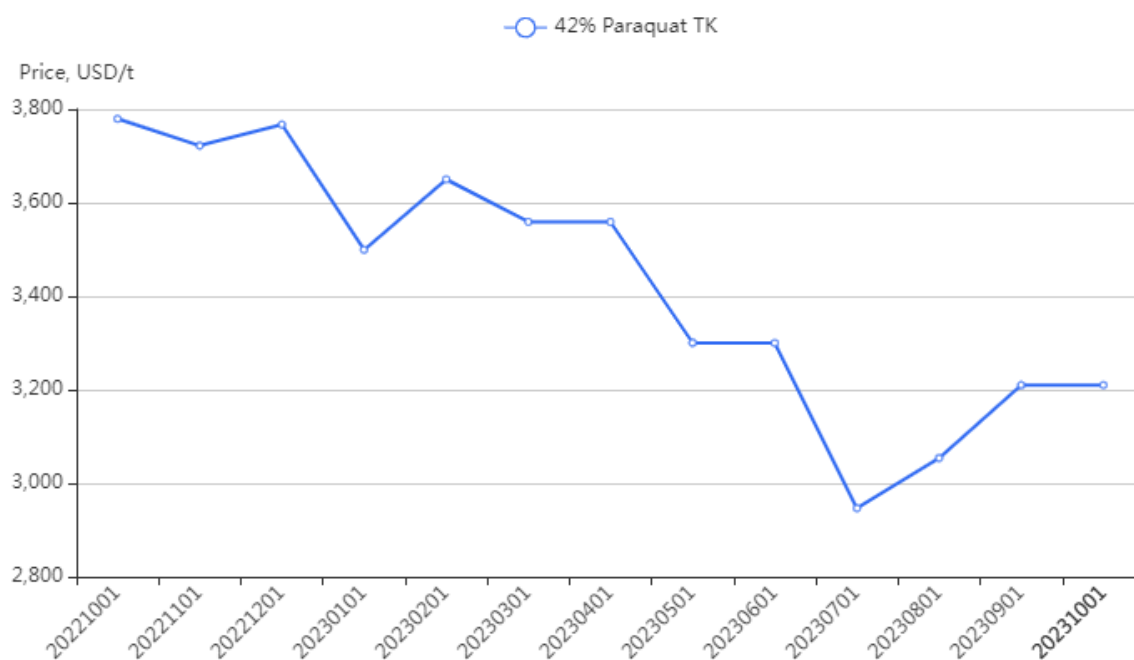
#### Pyridine price goes up, paraquat price stabilises in early Oct.

Summary: In early Oct., the price of paraquat in China was stable, and the price of pyridine had a 4.69% MoM increase, which is pretty much in line with the previous projection. Slight increases in the price of the two products are expected in the short term.

CCM's price monitoring data show that the FOB price of paraquat 42% TK in China remained at USD3,210/t in early Oct.; on a yearly basis, the price still registered a 15.10% decrease. The ex-works price of pure pyridine increased to USD2,800/t (RMB20,100/t), up 4.69% MoM, yet it was still 52.14% lower than the price in Oct. 2022.

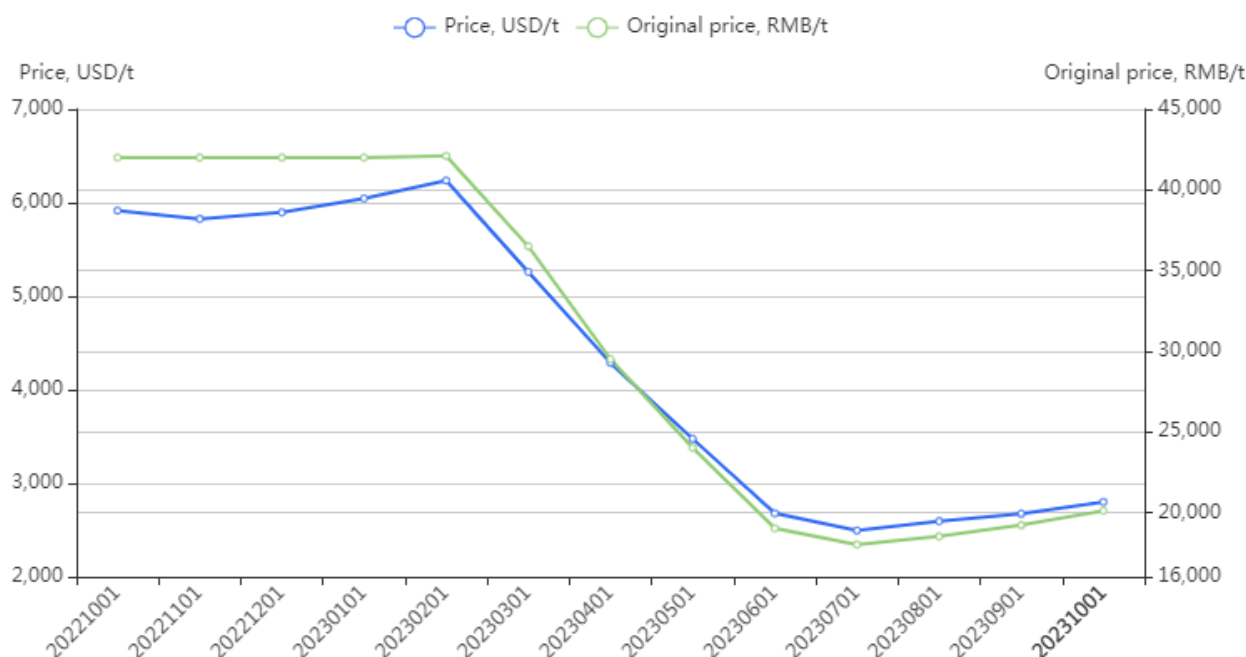
Considering the continuously improving pyridine market and the influence of rising raw material price on paraquat, it is expected that the two products will have slight increase in their prices in the near future.

**FIGURE 1:** FOB price of paraquat 42% TK in China, Oct. 2022–Oct. 2023



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

FIGURE 2: Ex-works price of pure pyridine in China, Oct. 2022–Oct. 2023



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

Source: CCM

### Nanjing Red Sun going deeper into pyridine & pyridine downstream industry

Summary: The chemical industry standard 2,3-Dichloro-5-(trifluoromethyl)pyridine for Industrial Use, formulation of which was led by Nanjing Red Sun, passed review by the Subcommittee on Organic Chemical of National Technical Committee on Chemistry of Standardisation Administration of China during 10–11 Oct., 2023. The company will go deeper along the industrial chains of pyridine, pyridine downstream products and pyridine-related products, and at the same time will help improve product quality standard system of pyridine and pyridine derivatives in China.

The chemical industry standard 2,3-Dichloro-5-(trifluoromethyl)pyridine for Industrial Use, formulation of which was led by Nanjing Red Sun Co., Ltd. (Nanjing Red Sun), passed review by the Subcommittee on Organic Chemical of National Technical Committee on Chemistry of Standardisation Administration of China during 10–11 Oct., 2023. 2,3-Dichloro-5-(trifluoromethyl)pyridine is an important intermediate for high-efficacy low-toxicity insecticide chlorfluazuron, high-efficacy green herbicide haloxyfop and broad-spectrum high-efficacy fungicide fluazinam.

Nanjing Red Sun is not only a leader and a drafter of pyridine-related standards, but also an active player in the transformation process of such standards and a beneficiary. Previously, it played a leading role in the formulation of standards for two pyridine derivatives—the industry standard 2,2'-Dipyridyl for Industrial Use and the industry standard 2,3,5,6-Tetrachloropyridine for Industrial Use; both have passed expert reviews successfully. In the future, the company will go deeper along the industrial chains of pyridine, pyridine downstream products and pyridine-related products, and at the same time will help improve product quality standard system of pyridine and pyridine derivatives in China.



Nanjing Red Sun is the first domestic pesticide enterprise that has achieved industrial production of pyridine bases, with the most complete chain and the largest capacity in the industry. This industrial chain starts from bioethanol made from sweet potato and cassava; intermediate products in this chain include 3-methylpyridine, 2,2'-dipyridyl and 2,3-dichloropyridine, and pesticide products include paraquat, diquat (diquat dichloride and diquat dibromide), chlorantraniliprole, chlorpyrifos and imidacloprid. Currently, Nanjing Red Sun's capacity for the core products—pyridine bases, paraquat, diquat and chlorpyrifos is among the world's largest. In recent years, the company has followed the business strategy "industrial chain extending, improving and supplementing" to dig deeper into the pyridine base industrial chain and has launched several projects for new products. It has pushed for the launch of investment projects for diquat dichloride and chlorantraniliprole, supported by independent innovation and technological upgrade. It now focuses on the production and sale of its flagship products such as diquat dichloride, diquat dibromide, 2,3-dichloropyridine, paraquat and 3-methylpyridine. In the future, it will continue to explore further into the development of downstream products of pyridine bases.

**TABLE 7:** Nanjing Red Sun's production capacity for some pyridine-related products, as of Oct. 2023

No.	Product	Capacity 2023, t/a	Remark	Status
1	Paraquat TK	100,000	Pyridine downstream product	Active operation
2	3-Methylpyridine	25,000	Pyridine derivative	Active operation
3	Diquat dichloride TK	20,000	Pyridine downstream product	Part of the capacity is in trial run.
4	Diquat dibromide TK	5,000	Pyridine downstream product	Active operation
5	Chlorantraniliprole TC	2,000	Downstream product of pyridine derivative	Trial run
6	2,3-Dichloropyridine	N/A	The production capacity serves chlorantraniliprole TC production	Trial run

Source:CCM





## Trade analysis

**July–Aug. sees YoY increases in China's herbicide formulation Imp. & Exp. volumes**

Summary: In July–Aug. 2023, China's herbicide formulations were mainly exported to Brazil, Australia, Indonesia, etc.; the export volume jumped by 12.39% YoY. Meanwhile, the import volume of herbicide formulations to China also increased, up by 69.02% YoY, and a great majority of these products were imported from Malaysia.

According to the statistics from General Administration of Customs of China (China Customs), in July–Aug. 2023, China exported 341,679 tonnes (actual volume, the same hereafter) of herbicide formulation products. Compared with the export volume achieved in July–Aug. 2022, this year's figure expanded 12.39%. As regards herbicide formulation imports, in the same period, China imported 1,885 tonnes of herbicide formulation products. The import volume was 69.02% larger than that of the same period last year. A great majority of these products were imported from Malaysia.

In terms of export, average export price during July–Aug. 2023 plunged by 50.59% YoY to USD2.52/kg, mainly affected by weak demand and big inventories in the market. In particular, the prices of glufosinate-ammonium and glyphosate, main organophosphorus herbicides in the market, were much lower than the prices last year; the price fall brought down the overall herbicide export price. Major export destinations of China's herbicide formulations were Brazil, Australia, Indonesia, Thailand, etc. in the two months. Although Brazil was still the biggest destination, the volume to the country contracted 12.96% YoY, down from 100,682 tonnes to 87,638 tonnes.

In terms of import, import price of herbicide formulations averaged at USD10.65/kg during July–Aug. 2023, down 15.10% YoY. Over 60% of the herbicide formulation imports came from Malaysia; the volume from this origin country more than tripled over the volume of the same period last year, rocketing from 374 tonnes to 1,169 tonnes.

**TABLE 8:** July and Aug. exports of herbicide formulations from China, 2023 vs 2022

Month	2023		2022	
	Actual volume, kg	Average price, USD/kg	Actual volume, kg	Average price, USD/kg
July	173,763,322	2.54	165,205,785	5.10
Aug.	167,916,096	2.50	138,799,084	5.10
<b>Total</b>	<b>341,679,418</b>	<b>2.52</b>	<b>304,004,869</b>	<b>5.10</b>

Source:China Customs





TABLE 9: Major destinations of herbicide formulations exported from China, July–Aug. 2023 vs July–Aug. 2022

No.	July–Aug. 2023			July–Aug. 2022		
	Destination	Actual volume, tonne	Share	Destination	Actual volume, tonne	Share
1	Brazil	87,638	25.65%	Brazil	100,682	33.12%
2	Australia	37,708	11.04%	Australia	23,522	7.74%
3	Indonesia	18,106	5.30%	Argentina	13,669	4.50%
4	Thailand	17,555	5.14%	Indonesia	12,176	4.01%
5	The US	13,639	3.99%	Thailand	11,195	3.68%
6	Ghana	13,602	3.98%	Nigeria	10,823	3.56%
7	Uruguay	12,660	3.71%	South Africa	9,199	3.03%
8	Nigeria	7,715	2.26%	Uruguay	7,602	2.50%
9	The Philippines	7,672	2.25%	The US	6,265	2.06%
10	Argentina	6,703	1.96%	Russia	6,183	2.03%
	Others	118,681	34.73%	Others	102,688	33.78%
	<b>Total</b>	<b>341,679</b>	<b>100.00%</b>	<b>Total</b>	<b>304,004</b>	<b>100.00%</b>

Note: Due to rounding, the total may not equal 100.00%.

Source: China Customs

TABLE 10: July and Aug. imports of herbicide formulations to China, 2023 vs 2022

Month	2023		2022	
	Actual volume, kg	Average price, USD/kg	Actual volume, kg	Average price, USD/kg
July	1,145,478	11.13	225,773	28.97
Aug.	739,832	9.91	889,647	8.38
<b>Total</b>	<b>1,885,310</b>	<b>10.65</b>	<b>1,115,420</b>	<b>12.55</b>

Source: China Customs





TABLE 11: Major origins of herbicide formulations imported to China, July–Aug. 2023 vs July–Aug. 2022

No.	July–Aug. 2023			July–Aug. 2022		
	Origin	Actual volume, tonne	Share	Origin	Actual volume, tonne	Share
1	Malaysia	1,169	61.98%	Malaysia	374	33.50%
2	Germany	276	14.61%	Hungary	323	28.98%
3	India	222	11.75%	Germany	237	21.29%
4	France	123	6.51%	India	61	5.49%
5	Australia	35	1.87%	France	47	4.22%
6	Indonesia	26	1.38%	Italy	22	1.99%
7	Italy	24	1.28%	Australia	18	1.58%
8	The US	12	0.61%	Indonesia	14	1.26%
	Others	0	/	Others	19	1.69%
	<b>Total</b>	<b>1,885</b>	<b>100.00%</b>	<b>Total</b>	<b>1,115</b>	<b>100.00%</b>

Note: Due to rounding, the total may not equal 100.00%.

Source: China Customs



## Brief news

### NATESC recommends herbicides for weed control in autumn-sown wheat & rape fields

On 8 Oct., the National Agro-Tech Extension and Service Centre (NATESC) rolled out the Technical Programme for Scientific Prevention and Control of Weeds in Autumn-Sown Wheat and Rape Fields in 2023, to improve weed prevention and control in a scientific manner for autumn-sown crops.

Regarding weed prevention and control for the two crops, NATESC makes recommendations as follows:

- In wheat fields: Herbicides such as isoproturon, flufenacet, pretilachlor, fenoxaprop-P-ethyl, diflufenican and mixed formulations of these active ingredients can be applied;
- In rape fields: Herbicides such as S-metolachlor, haloxyfop-P-methyl, benazolin-ethyl, clopyralid, quizalofop-P-ethyl, clethodim, sethoxydim, acetochlor and mixed formulations of these active ingredients can be applied to control noxious weeds mainly including the four key targets—*Alopecurus* spp., American sloughgrass, tender catchweed bedstraw and *Malachium aquaticum*.

### FLAGCHEM's subsidiary acquires invention patent for saflufenacil intermediate synthesis

On 10 Oct., Jiangsu Flag Chemical Industry Co., Ltd. (FLAGCHEM) announced that its subsidiary Anhui Neotec Co., Ltd. had recently received certificate of invention patent on a synthesis method for a key intermediate of saflufenacil (patent number: ZL202210070438.1). The patent was applied on 21 Jan., 2022; its valid period is 20 years. The synthesis method, using easily accessible raw materials, can produce a key intermediate of saflufenacil with high purity and good quality through a reasonable production technology. With these features, the method can be adopted in mass production.

Saflufenacil is a foliage-applied novel uracil herbicide. It can be used in multiple production systems and in non-cultivated land, at both pre-emergence and post-emergence periods. It is applicable on 30 plus crops, including maize, cotton, rice, sorghum, soybean and fruit trees. It has broad control targets, being effective against more than 90 broadleaf weeds, which include some weeds that have developed resistance to glyphosate, triazine herbicides and ALS inhibitor herbicides. Moreover, saflufenacil has quick effect and long residual period.

### Hubei Changqing plans to expand capacity for MEA, an intermediate of amide herbicides

On 12 Oct., some basic environmental impact assessment (EIA) information on Changqing (Hubei) Bio-tech Co., Ltd. (Hubei Changqing)'s 5,000 t/a 2-methyl-6-ethylaniline (MEA) chemical construction (expansion) project was published at the website of the Bureau of Ecology and Environment of Yichang City. The company has planned to build 5,000 t/a MEA production capacity, along with supporting facilities. MEA is a key intermediate for the production of amide herbicides such as S-metolachlor, metolachlor and acetochlor.

### Gansu Binnong's 22kt/a pesticide & intermediate project approved after major change

On 8 Oct., approval of the environmental impact (EI) report of Gansu Binnong Technology Co., Ltd. (Gansu Binnong)'s 22,000 t/a pesticide and intermediate project (after major change) was announced at local government's website. According to the revised EI report, the whole project will still be constructed at two phases: building 9,000 t/a methyldiethoxyphosphine and 5,000 t/a glufosinate-ammonium production capacity in Phase I, and building another 5,000 t/a glufosinate-ammonium and 3,000 t/a bentazone capacity in Phase II. It is worth noting that EI report of the original project was approved by local authorities in late March 2021.





Major changes have been made to the design capacity for glufosinate-ammonium products—altered to 9,000 t/a glufosinate-ammonium TC (4,500 t/a at each phase) plus 9,400 t/a by-product glufosinate-ammonium 22% AS (4,700 t/a at each phase) from the previous 10,000 t/a glufosinate-ammonium TC (5,000 t/a at each phase) plus by-product 12,000 t/a glufosinate-ammonium 11% AS (6,000 t/a at each phase). Besides, 6,000 t/a by-product hydrochloric acid (20%) equipment and a set of hydrochloric acid concentration equipment will be added this time.

### **China sees growth in planting area of autumn grain crops**

In late Sept., the National Food and Strategic Reserves Administration held the working conference on autumn grain purchase, which outlined the purchase work this year. It is expected that the purchase volume in the peak season would reach some 200 million tonnes. High attention should be paid to autumn grain purchase, since autumn grain output accounts for about 75% of annual total in China. Recent agricultural survey shows that an increase in the sown area of autumn grain crops is witnessed, and the plants are in good condition in most regions. A bumper harvest is thus expected.

### **China to allow foreign investment full access to the manufacturing sector**

On 18 Oct., in his keynote speech at the opening ceremony of the third Belt and Road Forum for International Cooperation, Chinese president Xi Jinping announced that China would remove all restrictions on foreign investment access in the manufacturing sector. That will be a step forward on top of the already basically opened manufacturing sector to foreign investment across China as well as the all-round opening-up of manufacturing sector in the Free Trade Zones.

China must actively participate in economic globalisation and make good use of all available high-quality resources around the world in order to leapfrog from a major manufacturing country to a manufacturing powerhouse. Only in this way can the pace towards global manufacturing powerhouse be accelerated. The decision to allow foreign investment full access to the manufacturing sector shows China's firm determination to open up wider to the outside world. In China, the agrochemical industry is a branch of the manufacturing industry, and undoubtedly, the full access will create favourable conditions for overseas funds flowing into China's pesticide industry.

### **Shandong NHU to dabble in pesticide industry with 60kt/a phosphorus amino acid project**

On 18 Oct., the environmental impact report of Shandong NHU Amino Acid Co., Ltd. (Shandong NHU)'s 60,000 t/a phosphorus-containing amino acid project was released. The company has planned to construct the project in two phases; each phase will build 27,000 t/a capacity for phosphorus-containing amino acid technical and 15,000 t/a capacity for phosphorus-containing amino acid 20% soluble agent.

Phosphorus-containing amino acid can be used as a broad-spectrum organophosphorus herbicide with low-toxicity, high herbicidal activity and good environmental compatibility. Although it has slower action than paraquat, this amino acid derivative acts faster than glyphosate. It thus can be regarded as a non-selective herbicide alternative to glyphosate and paraquat, and enjoys great market prospect. In places where weeds have developed resistance to glyphosate, phosphorus-containing amino acid can be a substitute.





It should be noted that Shandong NHU is not a pesticide enterprise, but an amino acid enterprise. Its main products include methionine. Considering the company's new project, accumulated production technology and market prospect, it is believed that Shandong NHU would enter the pesticide industry.

### **Hubei Xingfa's sub-subsidiary plans to build 50kt/a 2,4-D project**

In mid-Oct., some basic environmental impact assessment information of Hubei Xingchen Technology Co., Ltd. (Hubei Xingchen)'s 50,000 t/a 2,4-D project was released by local government. The company plans to set up 50,000 t/a 2,4-D production lines, along with public utilities, environmental protection facilities and other supporting facilities, in its newly acquired land in the Yidu Chemical Industrial Park, Yidu City, Hubei Province.

Hubei Xingchen, established on 11 March, 2022, is a sub-subsidiary of Hubei Xingfa Chemicals Group Co., Ltd. (Hubei Xingfa). Its registered address is at No.66 Xingyi Avenue, Zhicheng Town, Yidu City. Its business scope covers pesticide production and pesticide retailing.

### **EI report of Ningxia Yongnong's 27kt/a pesticide TC & intermediate project accepted**

On 18 Oct., acceptance of the environmental impact (EI) report of Ningxia Yongnong BioSciences Co., Ltd. (Ningxia Yongnong)'s 27,000 t/a high-efficacy pesticide TC & intermediate project (after major changes) was announced by local government. The changes include modification made to design capacity for methyldiethoxyphosphine and glufosinate-ammonium in phase II and phase III, but the overall capacity remains the same, at 25,000 t/a for methyldiethoxyphosphine and 20,000 t/a glufosinate-ammonium. According to the EI report, four methyldiethoxyphosphine production lines will be built in three workshops and two PSA equipment zones, and glufosinate-ammonium lines in six workshops. As regards the use of methyldiethoxyphosphine capacity, 18,000 t/a is for self-use purpose, while the rest 7,000 t/a for sales purpose.

### **Hongkong Xingfa acquires 70% equity in Indonesia-based Amco**

In Oct., it was announced that Hubei Xingfa Chemicals Group Co., Ltd. (Hubei Xingfa)'s wholly-owned subsidiary Xingfa (Hong Kong) Imp. &Exp. Limited (Hongkong Xingfa) had completed the transfer work of its acquisition of 70% equity in the Indonesian company Amco.

The company Amco is the first production company overseas that Hubei Xingfa has acquired, and the completion marks a milestone in the company's internationalisation efforts. It is said that the company has production lines for herbicides (including paraquat and glyphosate AS), insecticides, fungicides, plant growth regulators, acaricides and molluscicides.

According to Hubei Xingfa, with this acquisition, Amco could take advantage of Hubei Xingfa's capital, technology, management skills and improve its paraquat and glyphosate AS business in Indonesia, which would consolidate and expand its influence first in the Indonesian pesticide market, and then in Southeast Asia market and the surrounding markets. This will better serve Hubei Xingfa's internationalisation strategy.





## Price update

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

TABLE 12: Ex-works prices of key herbicide raw materials in China, 8 Oct., 2023

Raw Materials	20230908		20231008	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% Glycine	12,000	1,671.59	13,500	1,880.51
92% Iminodiacetonitrile	8,600	1,197.97	8,600	1,197.96
99% Isopropylamine	9,550	1,330.31	9,550	1,330.29
98% N-(Phosphonmethyl) Iminodiacetic acid	18,500	2,577.03	17,750	2,472.52
99% Phosphorus trichloride	6,730	937.48	6,750	940.26
99.9% Pyridine	19,200	2,674.54	20,100	2,799.87

Note: Ex-works price includes VAT.

Source: CCM

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





TABLE 13: Ex-works prices of main herbicides in China, 8 Oct., 2023

Product	20230908		20231008	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% 2,4-D technical	13,700	1,908.4	16,500	2,298.4
92% Acetochlor technical	28,500	3,970.02	28,800	4,011.76
97% Atrazine technical	32,600	4,541.15	30,000	4,178.91
96% Bensulfuron-methyl technical	160,000	22,287.85	160,000	22,287.54
92% Butachlor technical	22,000	3,064.58	22,000	3,064.54
95% Clomazone technical	101,000	14,069.2	95,000	13,233.23
95% Cyhalofop-butyl technical	123,000	17,133.78	123,000	17,133.54
97% Diuron technical	38,000	5,293.36	38,300	5,335.08
98% Fenclorim technical	105,000	14,626.4	107,000	14,904.79
95% Fenoxaprop-P-ethyl technical	154,000	21,452.05	154,000	21,451.75
96% Fluroxypyr technical	100,000	13,929.9	98,000	13,651.12
95% Fomesafen technical	133,900	18,652.14	133,900	18,651.88
95% Glufosinate ammonium technical	62,100	8,650.47	62,100	8,650.35
95% Glyphosate technical	32,500	4,527.22	30,500	4,248.56
95% Haloxyfop-P-methyl technical	126,300	17,593.47	118,200	16,464.92
97% Metolachlor technical	45,000	6,268.46	42,000	5,850.48
95% Metsulfuron-methyl technical	135,000	18,805.37	135,000	18,805.11
95% Nicosulfuron technical	188,000	26,188.22	188,000	26,187.86
97% Oxyfluorfen technical	148,000	20,616.26	148,000	20,615.97
95% Pendimethalin technical	60,500	8,427.59	58,500	8,148.88
95% Pretilachlor technical	32,800	4,569.01	31,900	4,443.58
97% Pyrazosulfuron-ethyl technical	225,000	31,342.29	225,000	31,341.85





80% Quinclorac technical	133,000	18,526.77	133,000	18,526.52
95% Quizalofop-P-ethyl technical	192,500	26,815.07	185,000	25,769.96
95% Tribenuron-methyl technical	87,300	12,160.81	82,500	11,492.01
95% Trifluralin technical	40,500	5,641.61	40,000	5,571.88

Note: Ex-works price includes VAT.

Source: CCM

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



TABLE 14: Shanghai port prices of main herbicides in China, 8 Oct., 2023

Product	20230908		20231008	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% 2,4-D technical	14,200	1,978.05	17,000	2,368.05
92% Acetochlor technical	29,000	4,039.67	29,300	4,081.41
97% Atrazine technical	33,100	4,610.8	30,500	4,248.56
96% Bensulfuron-methyl technical	160,500	22,357.5	160,500	22,357.19
92% Butachlor technical	22,500	3,134.23	22,500	3,134.18
95% Clomazone technical	101,500	14,138.85	95,500	13,302.87
95% Cyhalofop-butyl technical	123,500	17,203.43	123,500	17,203.19
97% Diuron technical	38,500	5,363.01	38,800	5,404.73
98% Fenclorim technical	105,500	14,696.05	107,500	14,974.44
95% Fenoxaprop-P-ethyl technical	154,500	21,521.7	154,500	21,521.4
96% Fluroxypyr technical	100,500	13,999.55	98,500	13,720.77
95% Fomesafen technical	134,400	18,721.79	134,400	18,721.53
95% Glufosinate ammonium technical	62,600	8,720.12	62,600	8,720
95% Glyphosate technical	33,000	4,596.87	31,000	4,318.21
95% Haloxyfop-P-methyl technical	126,800	17,663.12	118,700	16,534.57
97% Metolachlor technical	45,500	6,338.11	42,500	5,920.13
95% Metsulfuron-methyl technical	135,500	18,875.02	135,500	18,874.76
95% Nicosulfuron technical	188,500	26,257.87	188,500	26,257.5
97% Oxyfluorfen technical	148,500	20,685.91	148,500	20,685.62
95% Pendimethalin technical	61,000	8,497.24	59,000	8,218.53
95% Pretilachlor technical	33,300	4,638.66	32,400	4,513.23
97% Pyrazosulfuron-ethyl technical	225,500	31,411.94	225,500	31,411.5







80% Quinclorac technical	133,500	18,596.42	133,500	18,596.16
95% Quizalofop-P-ethyl technical	193,000	26,884.72	185,500	25,839.61
95% Tribenuron-methyl technical	87,800	12,230.46	83,000	11,561.66
95% Trifluralin technical	41,000	5,711.26	40,500	5,641.53

*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 Oct., 2023





TABLE 15: FOB Shanghai prices of main herbicides in China, 8 Oct., 2023, USD/t

Product	20230908	20231008
98% 2,4-D technical	1,943.82	2,341.07
92% Acetochlor technical	3,960.95	4,002.59
97% Atrazine technical	4,397.37	4,046.6
96% Bensulfuron-methyl technical	21,797.47	21,797.16
92% Butachlor technical	3,105.17	3,105.13
95% Clomazone technical	13,813.95	12,993.14
95% Cyhalofop-butyl technical	16,176.18	16,175.95
97% Diuron technical	5,259.89	5,301.35
98% Fenclorim technical	14,347.87	14,620.96
95% Fenoxaprop-P-ethyl technical	20,987.96	20,987.67
96% Fluroxypyr technical	13,631.86	13,359.04
95% Fomesafen technical	18,281.02	18,280.77
95% Glufosinate ammonium technical	8,167	8,166.88
95% Glyphosate technical	4,898.83	4,597.3
95% Haloxyfop-P-methyl technical	17,208.44	16,104.59
97% Metolachlor technical	6,231.28	5,815.78
95% Metsulfuron-methyl technical	18,435.45	18,435.19
95% Nicosulfuron technical	25,585.57	25,585.21
97% Oxyfluorfen technical	19,443.21	19,442.94
42% Paraquat TK	3,210	3,210
95% Pendimethalin technical	8,336.32	8,060.63
95% Pretilachlor technical	4,585.7	4,459.81
97% Pyrazosulfuron-ethyl technical	30,609.94	30,609.51





80% Quinclorac technical	18,150.37	18,150.11
95% Quizalofop-P-ethyl technical	26,197.99	25,176.94
95% Tribenuron-methyl technical	11,915.01	11,259.73
95% Trifluralin technical	5,449.5	5,382.15

*Note: FOB price is calculated mainly based on ex-works price, tax refund, value added tax rate, exchange rate, etc.  
Source: CCM*

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