

BEYOND THE REALITY

New Dynamics of China's Agrochemical Industry

S P M B I O S C I E N C E S (B E I J I N G)
I N C .



Xiaoyu Li (David)
Marketing Director & Chief Analyst

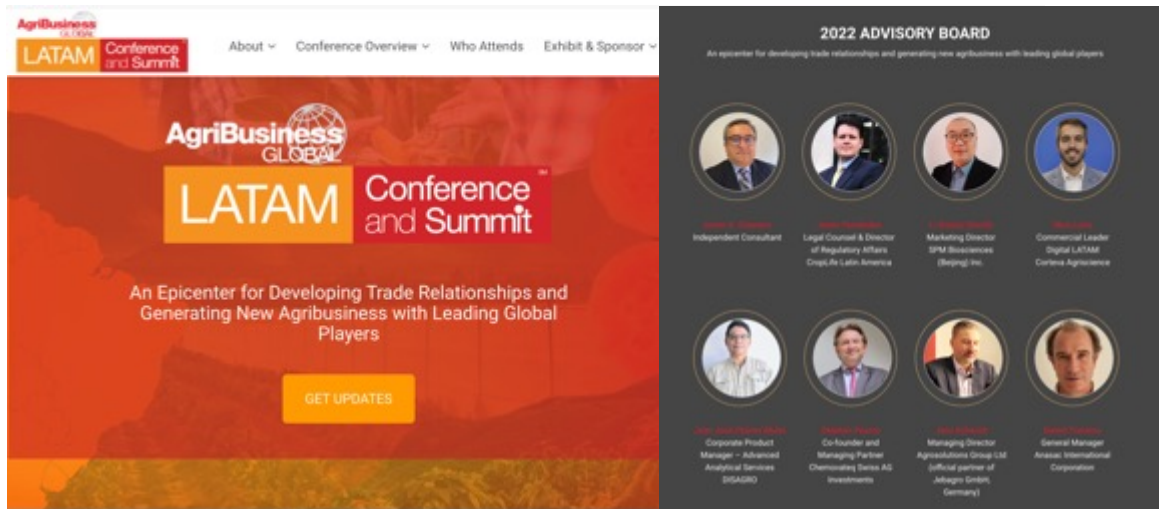
*3rd Party Alliance with China Agricultural
University*

China Strategic Sourcing

Column Contributor for Agribusiness Global

Email: lixiaoyu1930@gmail.com

Something can not be missed!



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An Epicenter for Developing Trade Relationships and Generating New Agribusiness with Leading Global Players

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REALITY

1

2022

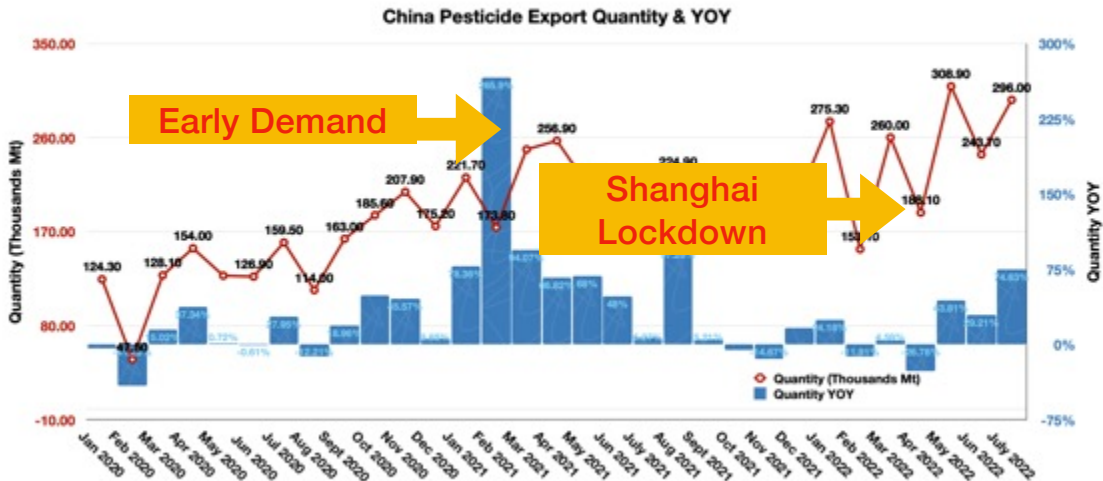
3



INFLECTION POINT

Fluctuating Upward Trend of Global Agrochemical Demand

From Jan to Jun 2022, quantity of China exported agrochemicals was 9.56% increase YOY 2021.



Stable High Pricing Level, Inflection Point Shows Up

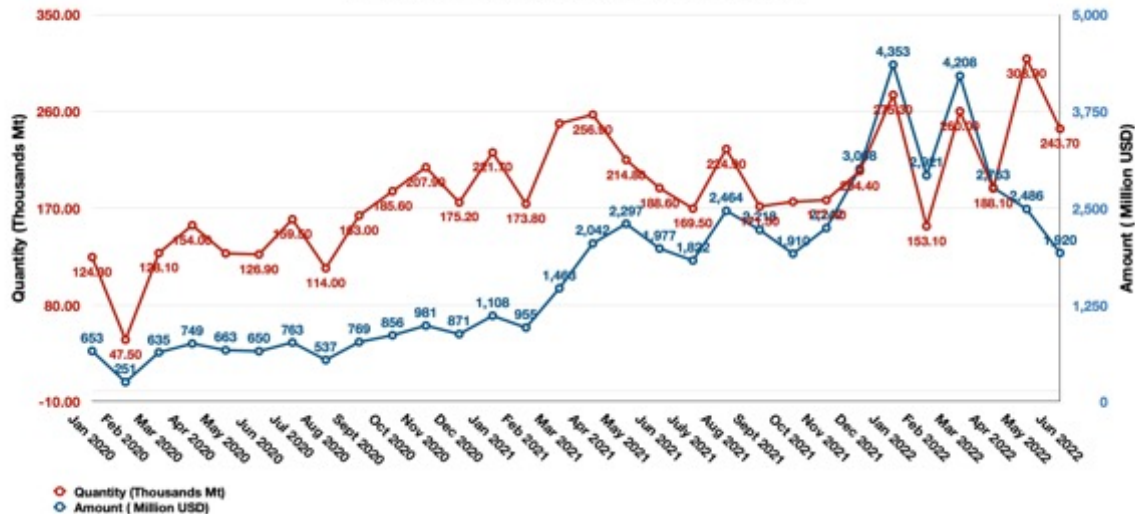
In 1st half 2022, amount of China exporting agrochemicals touched **89.50%** YOY 2021.



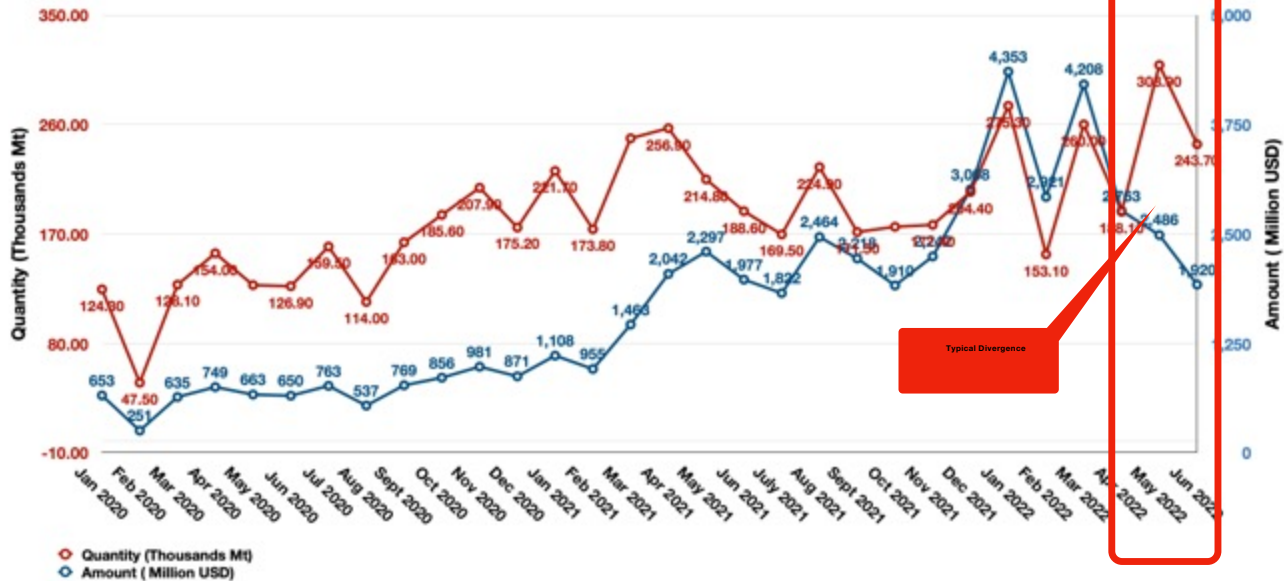
Divergence from May 2022

For the first time, the price curve diverged from the export volume in May 2022

China Pesticide Export Quantity & Export Amount

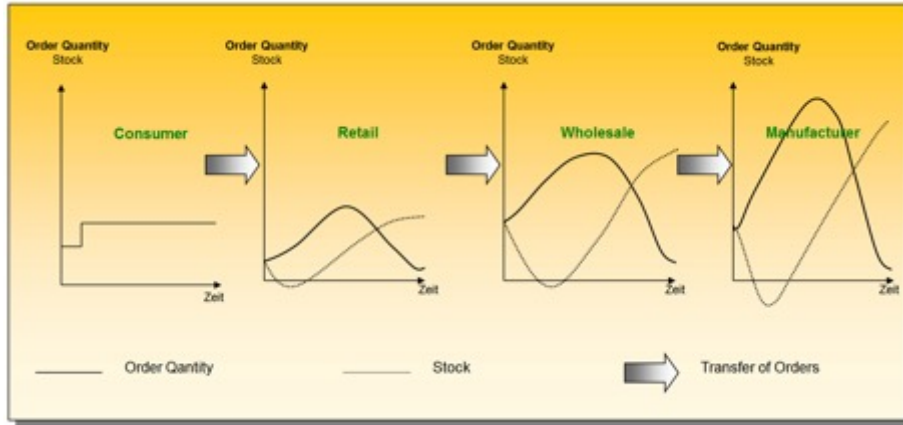


China Pesticide Export Quantity & Export Amount

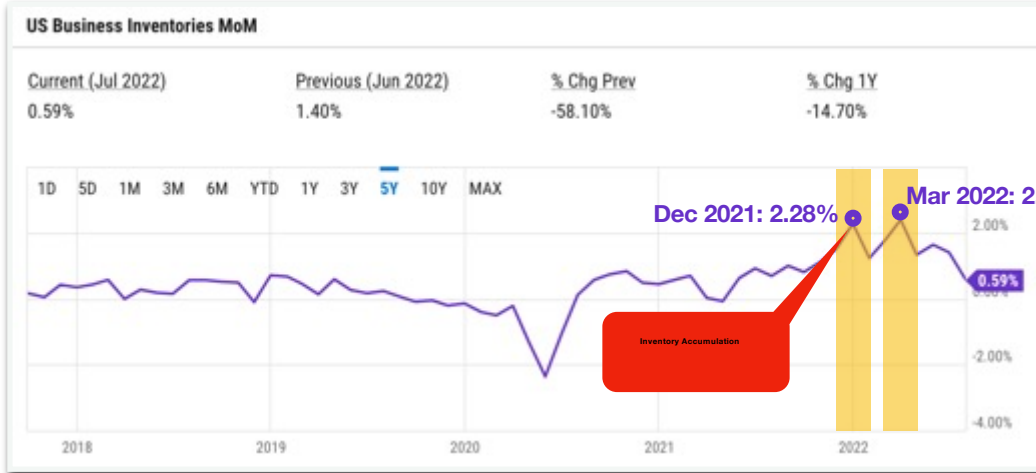


A Real Inevitable Problem

The bullwhip effect is a *supply chain* phenomenon where orders to suppliers tend to have a larger variability than sales to buyers, which results in an amplified demand variability upstream.



The Manufacturing & Trade Inventories & Sales report provides broad and timely measures of combined changes in domestic retail trade, wholesale trade and manufacturers' activities.

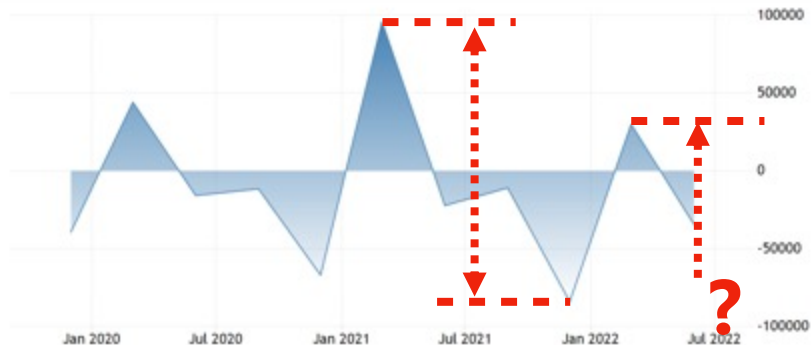


Source: https://ycharts.com/indicators/reports/manufacturing_and_trade_inventories_and_sales
Census Bureau

Brazil Changes in Inventories

Summary Forecast Stats Download ▾

3Y 10Y 25Y MAX Chart Compare Export API Embed





Weak pricing but narrow fluctuation
Slower growth rate of agrochemical quantity
Lower demand than expectation
Bullwhip effect caused high channel inventory



**FUTURE
RISK**

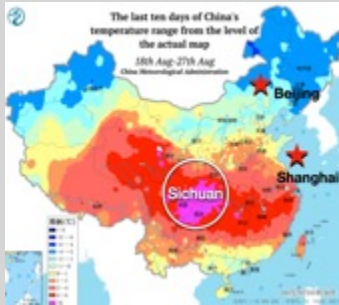
Three Waves of Supply Shortage

1st: 2020 - COVID19

2nd: 2021- Disruption of Supply Chain

3rd: 2022 Energy Crisis

- ***Extreme weather bring disruption and energy crisis***



- ***Shortage of EU energy push up diversity of chemical supply chain***



- ***Risky recession by tightening monetary policy***



Diversity of Supply Chain: China With lower Energy Cost

*BASF says it would stop output if gas
supplies fell to half its needs*

Dual Impacts of Natural Gas Shortage

*60% of the gas for Energy
40% as a raw material to produce
important basic chemicals*

Source: <https://www.reuters.com/business/energy/basf-says-it-would-stop-output-if-gas-supplies-fell-half-its-needs-2022-03-30/>



- ***Depreciation of global money against strong dollar***



- ***Low freight cost exacerbates the decline in demand***



- ***Uncertainty of Geopolitic***
50th Years of the
Shanghai Communiqué
1972 - 2022





Understanding the New Dynamics of China's Agrochemical Industry

SWOT for 2023 Season China Agrochemical Supply

Sufficient Capacity & High Productivity

Low Cost of Energy

Mature industrial workers

Reasonable Pricing

Complete Petrochem Upstream

Chem Clusters & Industry Parks

Efficient Supply Chain

Transitional period of New Economy

Lack of Young Entrepreneurs

Possible Policy Disruption of Operation

Uncertainty of Geopolitic Issue

Divergence of Western & Eastern Culture

Lack Insight of Global CP industry Value chain

Demand of In-time Delivery

Depreciation of CNY

Transforming of EU Chem Industry

Lower Inflation Rate

Lower Freight Cost

Resilience of Global Supply Chain

Environment Compatibility & Carbon Goal

Confidence from Global Sourcing Team

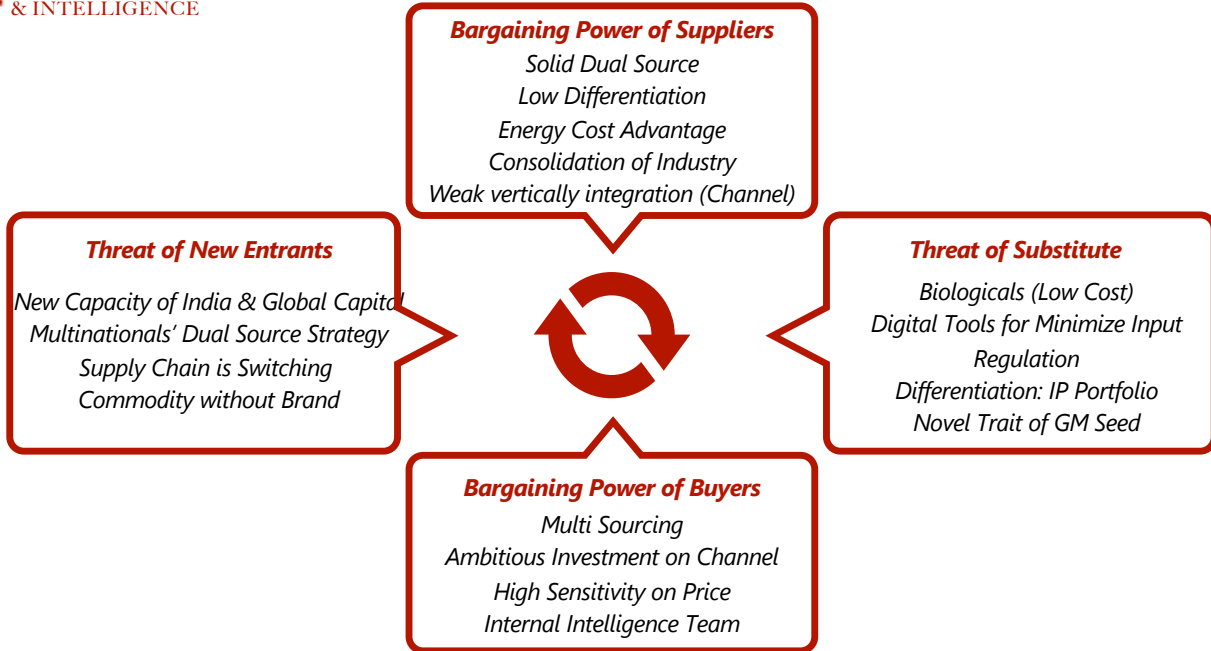
De-globalization

Alternative Solution (BIO)

Competition from 2nd Source

Shift of Global Sourcing

Monetary Policy





NYSE, TSX: NTR

News Release

January 6, 2020

Nutrien Announces Agreement to Purchase Brazilian Ag Retailer Agrosema



Acquisition of Nativa to Expand Agricultural Input & Service Business in Brazil

**China Agrochemical
Industry
Rivalry**



Industry Competitive Advantages

- *New capacities with high automation/continuous reaction flow*
- *Morden chemical equipments adoption: micro-channels, micro-interfaces, and tubular reactors*
- *Innovative Catalyst R&D*
- *Industrialized asymmetric synthesis reactions*
- *Low cost of energy for power and raw materials*
- *Mature industrial workers*
- *Complete Petrochem Upstream*
- *Chem Clusters & Industry Parks*
- *Efficient Supply Chain & Logistic Service*

Dual Source Strategy

RETAIL INDUSTRY

What Corteva Leaders Say About The Future of Seed, Crop Protection and Digital Ag

King (Mr. Robert King, executive vice president, crop protection business unit) continued: “When you think about this end to end supply chain, we're going to make a structural shift away from being transactional and centralized.”

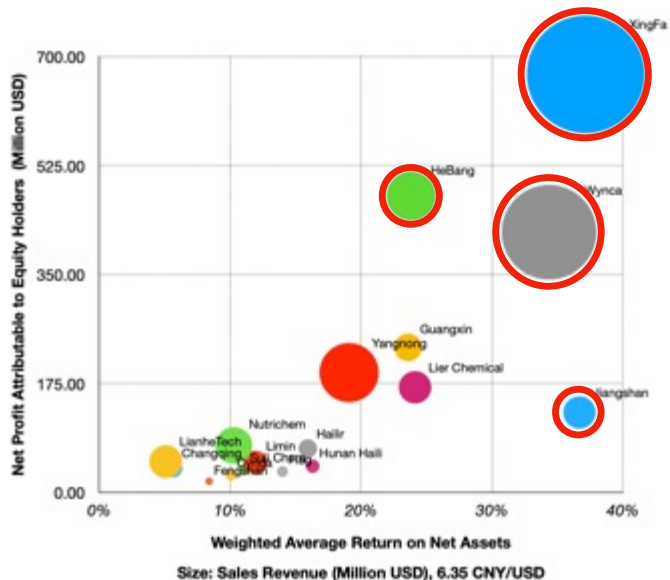
And King notes about \$2 billion of Corteva’s crop protection revenue is from Chinese-sourced AI, or about 25%. **Of those, 85% are dual sourced from other regions.**

Source: <https://www.thedailyscoop.com/news/retail-industry/what-corteva-leaders-say-about-future-seed-crop-protection-and-digital-ag>



A chance for the new players using China suppliers' competitive advantages to compete in CP market

2021 FY Market Scope of China Agrochemical Industry



The structure of China agrochemical industry is the reflection of global CP industry

Glyphosate manufacturers led the industry in 2021

Nutricem: Company Competitive Advantage Profile

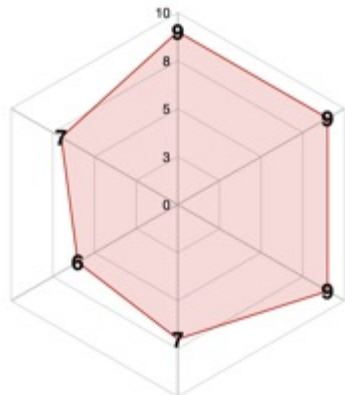


SPM Strategy & Intelligence is the first in the world to propose the application of **Company Competitive Advantage Profile (CCAP)** to guide decision makers conduct sourcing strategy by deep analysis on China agrochemical companies.

SWOT is an old fashion analysis tool which could not provide solution. SPM listed the key factors which represent the agrochemical producers' advantages. By CCAP, the sourcing leaders can easily to figure out the "shape" of the company. We can do the internal CCAP to overlap with the suppliers. We call it the "Modulized" cooperation. This makes working together like a lego set. It will help global sourcing team to find out "the right it" for long-term business management.

Reputation & Compliance

- Leadership shift to down-to-earth attitude
- Good reputation in China agrochemical market
- Close Cooperation with ICAMA
- No violations of environmental regulations



Full Upstream

- Subsidiary company support on raw material supply
- Construction of new capacities
- Financing competitiveness by introduction of strategy investors

Innovative R&D

- Strong capability on optimization of synthesis process for lower production cost & environment compatibility
- Strong know-how on future portfolio R&D
- Competitive R&D team on chemicals & formulations

Green Synthesis Process (GSP)

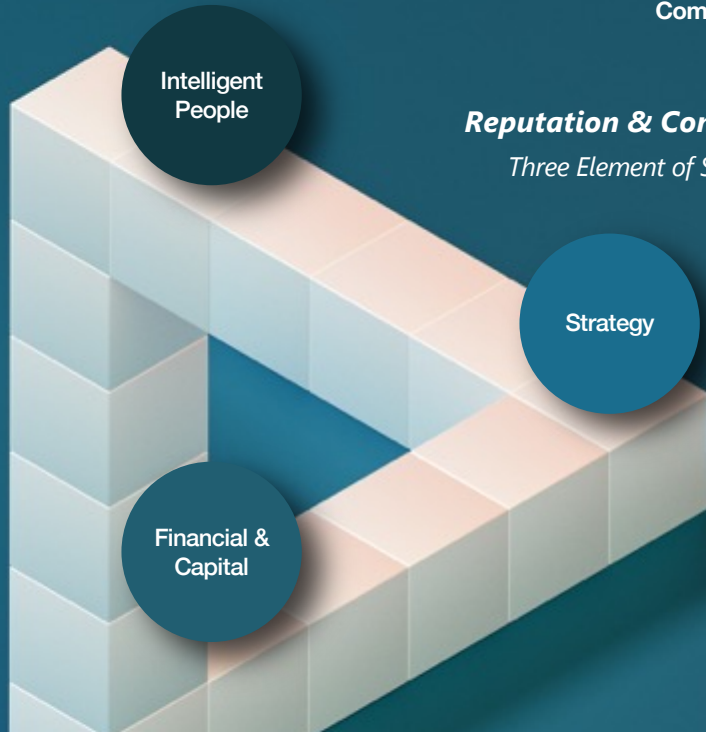
- Obvious advantage on GSP by new capacity construction
- High QHSE level by MNC audits
- Leader of energy saving and carbon emission in the industry

Global Registration

- Almost the first entrance into global CP industry value chain
- Alliance with the key accounts on registration
- Strong subsidiary in Brazil Market
- Expertise supporting to global registration
- GLP support

Marketing Strategy

- Focus on key accounts like multinational companies by B2B strategy
- Less of branding strategy and limitation of investment on global advertisement & media
- Ambitious on strategic B2B market in LATAM



Intelligent
People

Reputation & Compliance

Three Element of Success

Strategy

Financial &
Capital



Reputation & Compliance

The Five Principles of People

Observation

- *What kind of people he is close to?*
- *What did he give out when he was rich? What did he give to whom? What did he give out to do?*
- *What kind of people did he take with him when he succeeded?*
- *What does he not do when in trouble?*
- *When he was poor, what he didn't take?*

居视其所亲，
富视其所与，
达视其所举，
穷视其所不为，
贫视其所不取，
五者足以定之矣，
何待克哉！

《史记·魏世家》



Company Competitive Advantage

- *Data package support*
- *GLP lab support*
- *Proven experience in serving multinational companies*
- *Capability of leading registration project*
- *China registration*
- *Capable to deal with government affairs*

Global Registration



Nutrichem
laboratories in
Beijing and Suzhou
both passed OECD
GLP re-audit

GOOD LABORATORY PRACTICE
STATEMENT OF
COMPLIANCE IN ACCORDANCE WITH
DIRECTIVE 2004/9/EC

Period of inspection: 3/14/2022 to: 3/18/2022

According to the criteria specified in the article 5, § 8 of the Royal Decree of March 6, 2002 the General Director of the Sciensano, endorses on the advice of the GLP Monitorate, that the Test Facility,

Nutrichem (Suzhou) Laboratory Co., Ltd,
3/F, Building 1, Zone 6, No 128 Fangzhou Road,
Industrial Park, Suzhou, P.R. China.
N02

has carried out *Toxicity studies & mutagenicity studies* with respect to the OECD and the EU principles of Good Laboratory Practices between 02/11/2020 and 18/03/2022.

An inspection in non-adherent OECD member economies will not be listed in the OECD register. The receiving authority can send at any moment additional GLP inspectors to verify the accuracy of the compliance statements signed by the Study director for a specific study.

The Test Facility is regularly inspected within a cycle of 2 to 3 years.

Brussels, Friday, 13 May 2022 Christian Digitally signed by Christian

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New Pesticide Regulations (2017)

中华人民共和国国务院令

第677号

《农药管理条例》已经2017年2月8日国务院第164次常务会议修订通过，现将修订后的《农药管理条例》公布，自2017年6月1日起施行。

总理 李克强

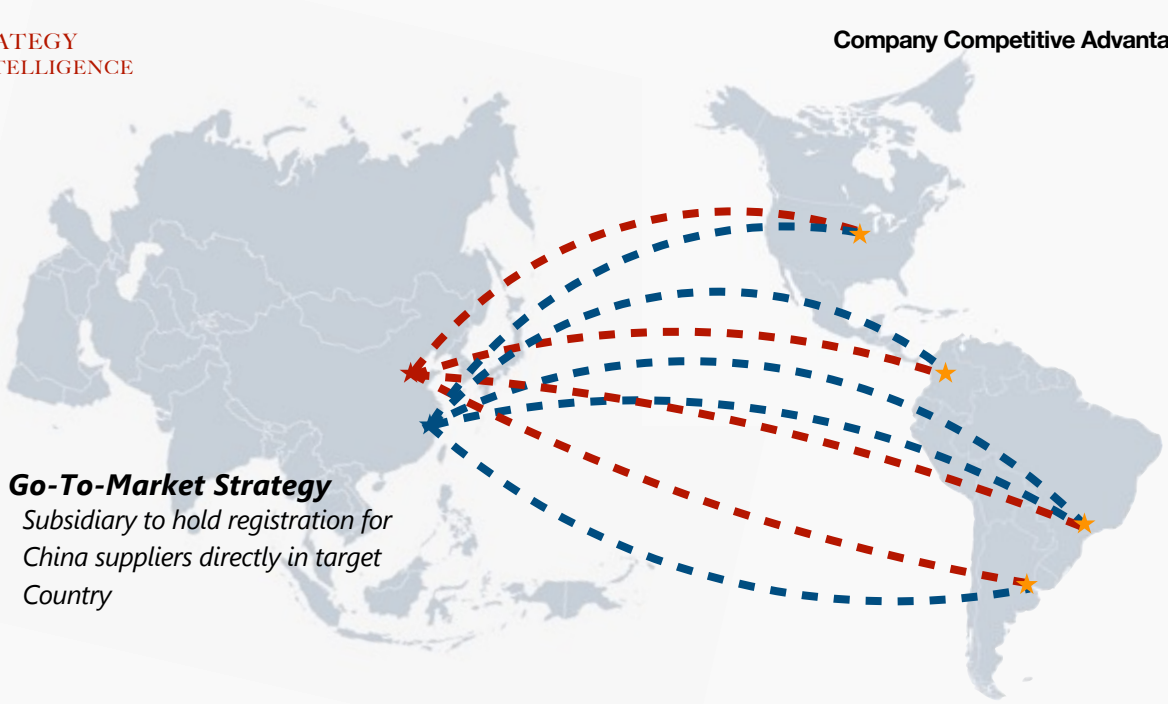
2017年3月16日

农 药 管 理 条 例

(1997年5月8日中华人民共和国国务院令第216号发布
根据2001年11月29日《国务院关于修改〈农药管理条例〉
的决定》修订 2017年2月8日国务院第164次常务会议修订通过)

Go-To-Market Strategy

*Subsidiary to hold registration for
China suppliers directly in target
Country*





Marketing

- *B2B marketing strategy*
- *Portfolio focus*
- *Subsidiaries for market access*
- *Early Launch into the market*
- *CDMO and tolling manufacturing*
- *White brand of formulation*

Strategy



Full Upstream

- *World class industrial clusters*
- *From petrochem to fine chemical*
- *Integrated waste treatment*
- *Renewable energy*
- *Carbon footprint minimization*
- *Consolidation & strategic investment*

BASF commences its smart Verbund project in Zhanjiang, China

- Milestone for BASF's US\$10 billion investment project in China
- World-class smart Verbund site with latest technologies and highest safety and sustainability standards
- First plants to produce engineering plastics and TPU serving a range of key industries

Today, BASF officially launched its smart Verbund project in Zhanjiang, Guangdong province, China, and commenced building its first plants. It marks a milestone of the company's US\$10 billion investment project announced in July 2018. The first plants will produce engineering plastics and thermoplastic polyurethane (TPU) to serve the increasing needs of various growth industries in the southern China market and throughout Asia.

"We are pleased to see our mega-investment project in China is progressing," said Dr.



Jens Fey

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At the end of 2020, *Corechem* introduced new strategic investment partner, Zhejiang Longsheng Co., Ltd (stock listed company), to lay out an innovative high-tech green manufacturing industry value chain.





Green Synthesis Process (GSP)

- *New capacities with high automation/continuous reaction flow*
- *Morden chemical equipments adoption: micro-channels, micro-interfaces, and tubular reactors*
- *Innovative Catalyst R&D*
- *High safety of production operation*
- *Artificial intelligence & digital tools*



Accumulation of process packages

- *In-house process for Azoxystrobin*
- *Ammonia oxidation technology*
- *Chlorination technology*
- *COS synthesis technology*
- *Benzonitrile hydrogenation technology*
- *Development of ammonia oxidation catalysts.*

2,4-D Green Production

- *Significantly increase the yield of synthesis;*
- *Greatly reducing the output of waste water;*
- *No longer with the odorous issue in the entire production and storage*
- *More than 50% 2,4-D exporting of China*



- *Digital upgrade of production workshop: Safety improvement*
- *Intelligent facility: Reduce the emission of wastes by 10-15%;*
- *Production efficiency enhancement: Production data for artificial intelligence & machine learning*

欣禾生物
corechem[®]



- *Industrialized asymmetric synthesis reactions*
- *Synthetic Biology and Enzyme Catalysis*
- *Peptidomimetic Insecticide by computational molecular design*
- *Structural optimization of natural products*
- *IP molecules*
- *Sustainable Novel Formulations with New Materials*



Innovative R&D



Synthetic Biology and Enzyme Catalysis for L-Glufosinate

Through synthetic biology and enzyme catalysis technology, enzymes for high efficiency glufosinate catalysis are prepared to efficiently convert D-glufosinate into L-glufosinate with high optical purity. The technology cooperation will be enabling Limin/Veyong Biochemical to achieve a seamless interface between continuous glufosinate synthesis methods and biosynthesis technology.



Prof. Xinling Yang
China Agricultural University

Research Article



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(wileyonlinelibrary.com) DOI 10.1002/ps.6920

A novel bee-friendly peptidomimetic insecticide: Synthesis, aphicidal activity and 3D-QSAR study of insect kinin analogs at Phe² modification

EU bans food imports with neonic pesticide residues starting in 2026

Bartosz Brzeziński, Eddy Wax | Politico | October 3, 2022



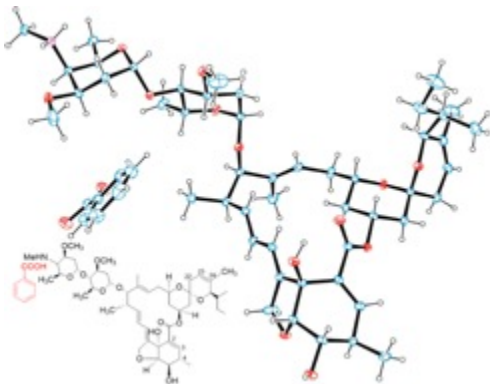
<https://geneticliteracyproject.org/2022/10/03/eu-bans-food-imports-with-neonic-pesticide-residues-starting-in-2026/>



Prof. Jianjun Zhang
China Agricultural University

High Value Utilization of an Avermectin Fermentation Byproduct: Novel B2a Derivatives as Pesticide Candidates

Qingbo Xu, Jinming Li, Wenxiu Guo, Juncheng Xiang, Liqi Zhou, and Jianjun Zhang*



Nematode Control

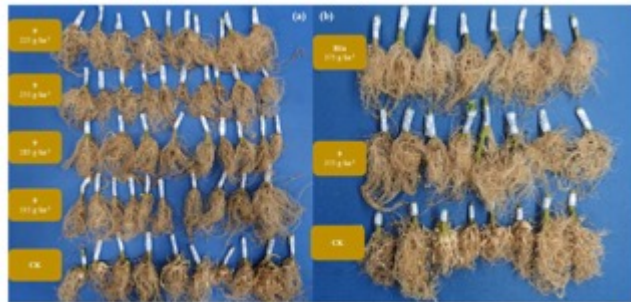
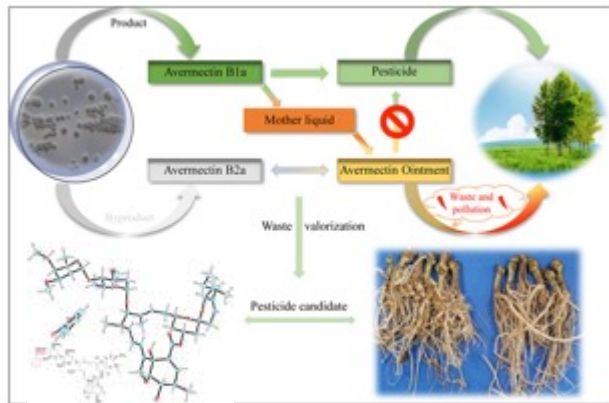


Figure S2 Treated plants 6 weeks after inoculation.



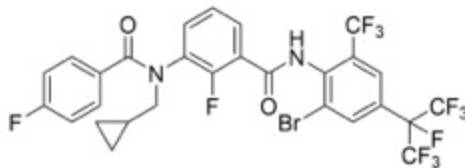
IP Molecule Innovation (China Market)

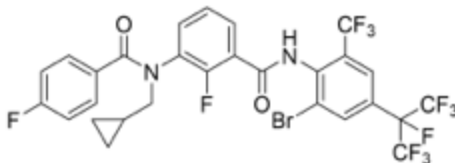


Cyproflanilide

CAS: 2375110-88-4

- No cross-resistance
- New crop protection tool
- High efficacy
- Long efficacy
- Eco-friendly





Field efficacy of Cyproflinilide against the Gnaphalocrosis

Formulation	Dosage (g/hm ²)	20 Days After Application	
		Rate of Roll Leaf %	Efficacy %
20% Cyproflinilide SC	15	2.71	92.74
	30	0.67	98.20
5% Abamectin EC	30	16.33	56.33
200 g/L Chlorantraniliprole SC	30	2.95	92.10
Source: CCPIA CK	/	67.48	/

Discovery and Development Costs of a New Crop Protection Product



Source: CLA/ECPA report on "The Cost of New Agrochemical Product Discovery, Development and Registration in 1995, 2000, 2005-8 and 2010-2014. R&D expenditure in 2014 and expectations for 2019."



***First Black Light Manufacturing
Plant in China***

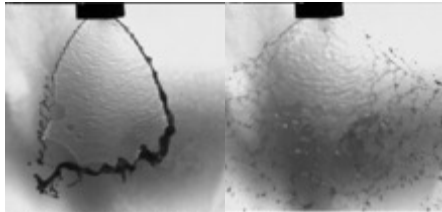
Full portfolio: D98 (600-900nm)





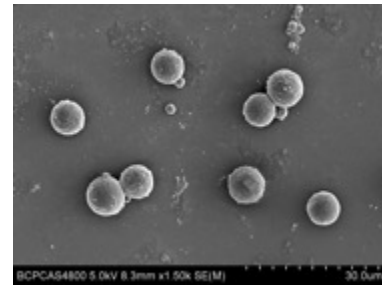
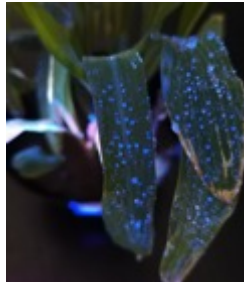
Novel Formulation & Advanced Delivery System **Compatibility & Stability**

- Innovation on novel of formulation with new characteristics: Slow release technology, droplet management, interfacial properties, etc. (ME, CS, OD, DF)
- Safety enhancement by drift control
- Effect of surfactant on droplet bounce for different crops
- Formulation adaptability for new application (drone crop protection)



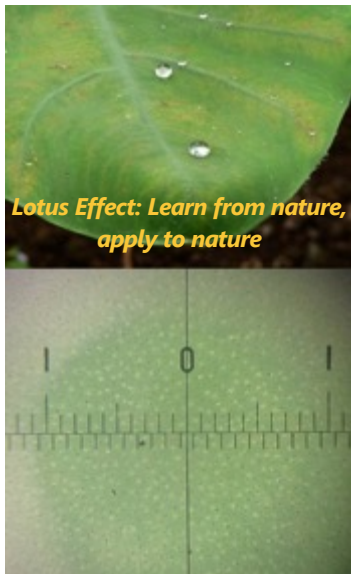
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Vendor: iX Cameras | Frame Rate: 12584 [fps]
| Image Size: 304 x 204 [px]

Time Stamp: 11.04.2019 19:40:30.2279 |
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Device Model: i-SPEED 220 | Device Vendor: iX Cameras | Frame Rate: 4011 [fps] | Image
Size: 576 x 384 [px]





Nano Pesticide Delivery System

***- Study of substances or structures with a
molecular size of 1 to 100 nm***

- Water-based to improve dispersion*
- Carrier encapsulation to enhance stability*
- Targeted delivery to improve AI utilization*
- Controlled release to extend shelf life*
- Catalytic degradation to reduce residue levels*



Strategic Sourcing



Venture Capital Consulting & Service



Innovative R&D

PREDICTION



Selected Strategic AIs for Target Market



Herbicides

Glyphosate
Mesotrione
Glufosinate
L-Glufosinate
Fomesafen
Dicamba
Metribuzin
Sulfentrazone
Clomazone
Atrazine
Florasulam

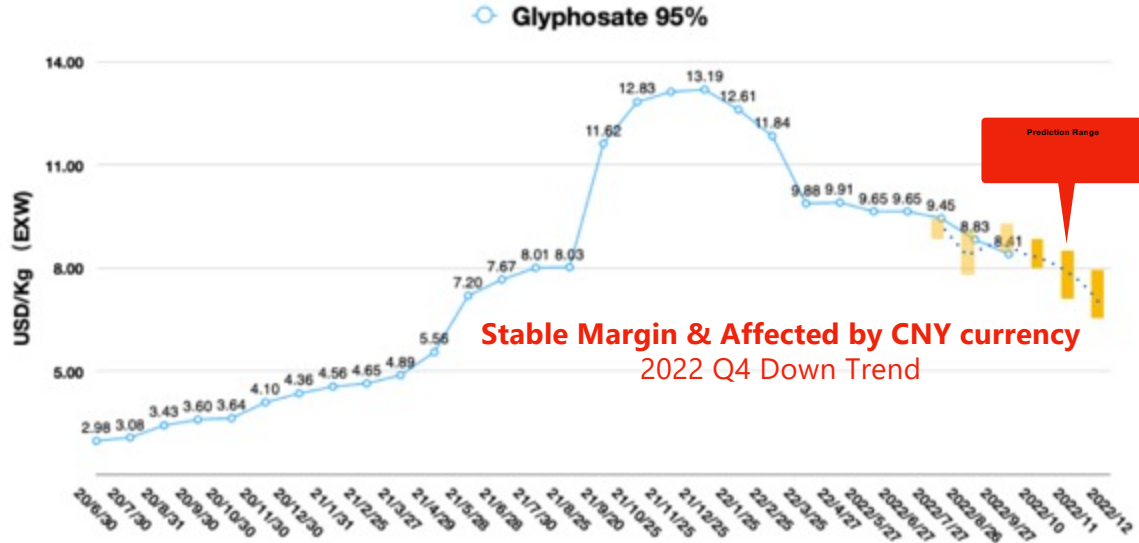
Fungicides

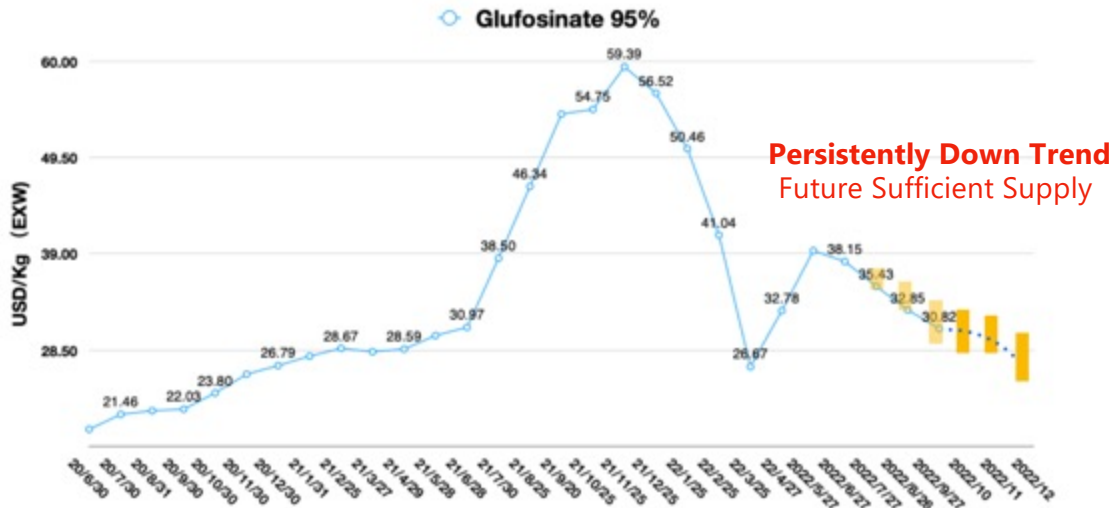
Chlorothalonil
Azoxystrobin
Tebuconazole
Propiconazole
Triabendazole
Fluazinam
Metalaxyl
Fludioxonil
Flutriafol
Prothioconazole


Insecticides

Bifenthrin
Emamectin Benzoate
Imidacloprid
Lambda-cyhalothrin
Acetamiprid
Chlorantraniliprole
Diflubenzuron

Price from Rocket High to Reasonable Margin







Most of us view change as a threat, and survival as the goal.
Change is not a threat, it's an opportunity. Survival is not the
goal, transformative success is.

Seth Godin

Survival is Not Enough

Believe in Intelligence & Wisdom

S P M B I O S C I E N C E S
(B E I J I N G) I N C .