BEYOND THE REALITY
New Dynamics of China’s Agrochemical Industry
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Something can not be missed!
REALITY

2022
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

Typical Divergence
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.

Inventory Accumulation

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

• Depreciation of global money against strong dollar

• Low freight cost exacerbates the decline in demand

• Uncertainty of Geopolitics
  50th Years of the Shanghai Communiqué
  1972 - 2022
Understanding the New Dynamics of China’s Agrochemical Industry
**SWOT for 2023 Season China Agrochemical Supply**

**Strengths:**
- Sufficient Capacity & High Productivity
  - Low Cost of Energy
  - Mature industrial workers
  - Reasonable Pricing
  - Complete Petrochem Upstream
  - Chem Clusters & Industry Parks
  - Efficient Supply Chain

**Weaknesses:**
- 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

**Opportunities:**
- 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

**Threats:**
- Confidence from Global Sourcing Team
  - De-globalization
  - Alternative Solution (BIO)
  - Competition from 2nd Source
  - Shift of Global Sourcing
  - Monetary Policy

- 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
**Threat of New Entrants**
- New Capacity of India & Global Capital
- Multinationals’ Dual Source Strategy
- Supply Chain is Switching
- Commodity without Brand

**Bargaining Power of Suppliers**
- Solid Dual Source
- Low Differentiation
- Energy Cost Advantage
- Consolidation of Industry
- Weak vertically integration (Channel)

**Threat of Substitute**
- Biologicals (Low Cost)
- Digital Tools for Minimize Input
- Regulation
- Differentiation: IP Portfolio
- Novel Trait of GM Seed

**Bargaining Power of Buyers**
- Multi Sourcing
- Ambitious Investment on Channel
- High Sensitivity on Price
- Internal Intelligence Team

**Porter’s Five Forces Analysis**
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
- Modern 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

Porter's Five Forces Analysis
Dual Source Strategy

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.

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*
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

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

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

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

Nutrichem: 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

Three Element of Success

Intelligent People

Financial & Capital

Strategy
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》
Global Registration

- 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
Nutrichem laboratories in Beijing and Suzhou both passed OECD GLP re-audit.
New Pesticide Regulations (2017)
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
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.
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
Innovative R&D

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

Prof. Xinling Yang
China Agricultural University
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/
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 Cyproflanilide against the Cnaphalocrocis

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Dosage (g/hm²)</th>
<th>20 Days After Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rate of Roll Leaf %</td>
</tr>
<tr>
<td>20% Cyproflanilide SC</td>
<td>15</td>
<td>2.71</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>0.67</td>
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<tr>
<td>5% Abamectin EC</td>
<td>30</td>
<td>16.33</td>
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<tr>
<td>200 g/L Chlorantraniliprole SC</td>
<td>30</td>
<td>2.95</td>
</tr>
</tbody>
</table>

Source: CCPIA

Field efficacy of Cyproflanilide against the Cnaphalocrocis

Company Competitive Advantage
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)
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
- Atrazine
- Picloram

Fungicides
- Chlorothalonil
- Azoxystrobine
- Tebuconazole
- Propiconazole
- Thiabendazole
- Fluazinam
- Metalaxyl
- Fludioxonil
- Rutidodiol
- Prothioconazole

Insecticides
- Bifenthrin
- Emamectin Benzoate
- Imidacloprid
- Lambda-cyhalothrin
- Abamectin
- Chlorantraniliprole
- Dibenzuron
Price from Rocket High to Reasonable Margin

Stable Margin & Affected by CNY currency

2022 Q4 Down Trend
Persistently Down Trend
Future Sufficient Supply
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

SPM BIOSCIENCES (BEIJING) INC.