

MAP Green and High-Quality Development Report 2023

Foreword

Sinochem developed the innovative Modern Agriculture Platform (MAP) model to proactively explore green and sustainable development within the agricultural sector. Since 2020, Sinochem Agriculture MAP has been releasing a *MAP Green Development Report* annually to highlight the sustainable development achievements of modern agricultural services and practices, and share experience in modern green agricultural development.

In 2023, MAP conducted a large-scale sample survey among the farmers in the regions where MAP provided services and products through random sampling, both online and offline. The survey covered 3,860 farmers and approximately 117,000 ha of farmland, including three main grain crops and most common cash crops. Data was collected and analyzed using a green development index system. The *Green and High-Quality Development Report 2023* ("the Report") presents that the Agricultural Green and High-quality Development Index of MAP farmers are 45.84 on average, 19.18% higher than non-MAP farmers. The Report also provides in-depth interpretations of some key indicators, and straightforwardly show the contributions of MAP to promoting green agricultural development.

This Report also features a collection of best practices of the MAP team in assisting farmers in adopting green and low-carbon technologies in 2023, witnessing and recording the milestones in promoting green and high-quality agricultural development in China.





Seeking transformation for Chinese agriculture and well-being for Chinese farmers

May 2024



Messages from the Management



Li Fanrong

Party Committee Secretary & Chairman of the Board, Sinochem Holdings Chairman of the Board, Syngenta Group

General Secretary Xi Jinping pointed out that green development underpins high-quality development, and new quality productive forces are green productive forces. We need to move faster to develop green and low-carbon production and operation methods in agriculture and make every effort to build a new pattern of agricultural development that promotes harmonious coexistence between humans and nature, which is an effective way to implement the new development strategy and an important part of developing new quality productive forces.

Sinochem Holdings actively implements the decisions and plans of the Party Central Committee and the State Council. Accordingly, we promote the MAP mode and provide comprehensive modern agricultural services via our MAP service centers and MAP demonstration farms across China. Based on these platforms, we develop and promote green and low-carbon production standards, standardize farming solutions, and explore the comprehensive utilization of reserve arable land such as saline-alkaline land. Efficient digital technologies are promoted, regenerative agriculture demonstration bases established, and green agricultural brands built. With the aim of conserving water and reducing fertilizers, pesticides, labor, and carbon emissions, we have made particular effort to improve the efficiency of resource utilization and increase the supply of green products, leading the newtype of agricultural businesses and small and mediumsized farmers on the path toward sustainable green agricultural development.

In the future, Sinochem Holdings will continue to work with ecosystem partners, promote green development, accelerate the R&D and application of green agricultural technology, and support the development of new quality productive forces in agriculture through effective environmental protection, efficient resource utilization, and sustainable agricultural development. Jeff Rowe Chief Executive Officer, Syngenta Group

With weather extremes, pest pressure and crop failures on the rise, feeding a growing global population and combating climate change have become two major challenges facing the world today.

Syngenta Group supports farmers in their role to tackle these challenges and turn agriculture into a solution to mitigate climate change.

In China, through our MAP Technical Service Centers, we provide farmers with products, services and solutions that help improve productivity and promote sustainable farming practices.

For example, in water-scarce areas, we have promoted low-flow drip irrigation and intelligent control irrigation systems to reduce water consumption through refined pipe networks and intelligent management. We have also promoted the use of core masterbatch and foliar fertilization across the country, effectively increasing soil nutrient absorption and fertilizer use efficiency.



By actively promoting "MAP Zhinong", a digital agriculture App, we also help farmers address challenges associated with climate change and reduce business risks with remote sensing field patrol and lower the use of synthetic fertilizers and crop protection products with precision agricultural technologies.

At Syngenta Group, we are focused on continuously improving the sustainability of agriculture in all that we do. Building on our achievements to date, we are moving forward with a new set of sustainability priorities and targets for a more sustainable future. Integrated across our organization at both strategic and operational levels, these will guide our innovation and provide long-term value.

MAP continues to lead the transformation of agricultural modernization in China, and thanks to the scalability of its sustainable practices in various regions, it is also creating more meaningful and sustainable impact for farmers around the world.

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Sinochem Holdings



Sinochem Holdings Corporation Ltd. ("Sinochem Holdings") was established through the joint restructuring of Sinochem Group Co., Ltd. and China National Chemical Corporation Ltd. on May 8, 2021. Sinochem Holdings is one of the leading state-owned enterprises under the supervision of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). It boasts over 220,000 employees.

Looking ahead, Sinochem Holdings will uphold the Company's value of "In Science We Trust" as it strives to develop a world-leading chemical conglomerate, constantly improve its technological innovations and enhance its core competitiveness and sustainability, and steadfastly move towards the vision of "becoming an industry-leading and respected chemical conglomerate" while constantly contributing to social progress and the development of the chemical industry.

In2023, Sinochem Holdings ranks 38th in the 2022 Fortune Global 500 list, and 1st in the chemicals industry.

Business Units



Syngenta Group

Syngenta Group is a subsidiary of Sinochem Holdings, and serves as the main operating company within its life science segment. As a global leader in agricultural technology and innovation, Syngenta Group is involved in the development, production, and commercialization of a diverse range of crop protection, seeds, and crop nutrition products, as well as modern agricultural services. Syngenta Group assists farmers around the world, both large and small, in enhancing their yields and adopting sustainable agriculture.

Syngenta Group, which was registered in Shanghai in 2019 with management headquarters in Switzerland, comprises four business units: Syngenta Crop Protection, Syngenta Seeds, Syngenta Group China and ADAMA. The company has a long-standing history of over 250 years in Switzerland and has now grown to employ over 59,000 people, operating in more than 100 countries and regions worldwide. In 2023, Syngenta Group posted \$32.2 billion in revenue.

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59,000	1
people	СС
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Syngenta Seeds is one of the world's largest developers and producers of seeds

ADAMA is a leading global leader in off-patent crop protection solutions



Syngenta Crop Protection is a leading global crop protection company

Syngenta Group China is the leading partner for agricultural technology and innovation in China.

Syngenta Group China

As one of the four business units within the Syngenta Group, Syngenta Group China is the leading partner for agricultural technology and innovation in the country. Our diverse portfolio encompasses seeds, Crop protection formulations, Active Ingredient, crop nutrition and farmer service in China. Based in China as a prominent participant in global operations, Syngenta Group China is committed to combining Syngenta Group's leading global innovations and talent resources with its local expertise, market insights and professional teams in China, to empower agrotechnological innovation, high-quality sustainable development, and the rural revitalization in China by accelerating the modernization of the country's agriculture industry.



19,000 employees

2023 sales

No.1

crop protection company in China

Leader

China

\$9.6 billion

Leader

seeds company in

chemical fertilizer company in China

MAP中化农业



and beyond

The MAP Model

On November 29, 2017, Sinochem launched the Modern Agricultural Platform (MAP) based on China's rural revitalization strategy and the development goals for agricultural and rural modernization.

Centered around the core value of "showcasing best practices, side-by-side with farmers", MAP developed a nationwide network of MAP service centers, MAP demonstration farms and a team of agronomists. MAP focuses on developing, demonstrating, delivering, and promoting whole-process planting solutions that prioritize "good varieties & good practices". By providing both high-quality seeds and showcasing best practices, MAP guides farmers to "grow quality crops, and sell at a good price". In addition, positioned as a "agricultural whole value chain co-creation and sharedservice platform", MAP collects and use big data to enhance industry efficiency.



MAP selects core advantageous production areas for different crop types, and establishes MAP service centers anddemonstration farms. MAP model enables agronomist to be close to small and medium-sized farmers and new type of agricultural businesses, and solve the "last mile" issue of providing agricultural technical services for villages and farmers.

MAP remains committed to its original mission of "seeking transformation for Chinese agriculture and well-being for Chinese farmers" to move forward with ongoing exploration. As of the end of 2023, MAP has provided services to over 100,000 farmers, covering over 2.2 million ha of farmland, through the deployment of 700 MAP service centers across China. MAP's steadfast dedication to innovation has enabled it to continually explore new ways for agricultural and rural modernization, as well as rural industry revitalization.



MAP中化农业



MAP Agricultural Green and High-quality Development

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Key Priorities of Sustainable Development

The profound impact of sustainable agriculture

Today's agriculture faces significant challenges including nourish a growing population, addressing climate change and protecting our natural resources.

It is expected that by 2050, the global population will reach 9.7 billion, leading to a 50% increase in food demand compared to current levels. Extreme weather events are becoming more frequent globally, with an increasing occurrence of major natural disasters. Meanwhile, agricultural production contributes to 22% of the total global greenhouse gas emissions. Agriculture has a substantial environmental impact, as it uses 70% of freshwater and 40% of global soil is being degraded.



Key Priorities of Sustainable Development



Syngenta Group China: Promoting sustainable practices



Key priorities of sustainable development 3 **Improving rural prosperity**

Our services include



Centralized production management through agricultural co-ops MAP pioneers new ways to link farmers' interests through various forms such as land equity and production management.



Order-based sales MAP promotes orderbased sales to enhance

farmers' incomes.

Key priorities of sustainable development 2 **Regenerate soil and nature**

Our initiatives include



The "Hope Soil Health+" service platform focuses on addressing soil issues by integrating online and offline services, assisting farmers in achieving sustainable planting.



The RootEco offers a comprehensive root solution to adjust microbial environment of the root and foster a harmonious interaction between crop roots and their surrounding environment.

The Run Tian Initiative centers around soil health, promoting the implementation of regenerative agriculture in China.

Key priorities of sustainable development **Sustainable operations**

Our models include



Zero-Carbon Factory

By creating a "Zero Carbon Factory", Syngenta Kunshan Factory has increased its output value by 17%, with an 11.34% reduction in unit energy consumption and carbon dioxide emissions intensity.



Low-carbon wheat

The low-carbon wheat produced in Huantai, Shandong Province, has increased yield by 7.5% under the same fertilization and irrigation conditions, reducing greenhouse gas emissions by 32%.

MAP Agricultural Green and High-quality Development Index

Committed to the research& development and promotion of green and low-carbon technologies, MAP facilitates the implementation of sustainable agricultural operations through social services, and raises the awareness of sustainable development among farmers, to maintain environmental conditions conducive to long-term agricultural development.

MAP supports the United Nations Sustainable Development Goals (SDGs) through its agriculture industry chain services. The MAP model contributes directly to reach Goal 2 (Zero Hunger) and significantly to achieve other five goals, including Goal 1 (No Poverty), Goal 6 (Clean Water and Sanitation), Goal 12 (Responsible Consumption and Production), Goal 13 (Climate Action), and Goal 15 (Life on Land).





Based on the core concepts of sustainable agricultural development and regenerative agriculture, and aligned with China's carbon-peaking and carbon neutrality strategy, as well as the No.1 Central Documents for 2023 and the National Green Development Plan for Agriculture during the 14th Five-Year Plan Period, MAP developed the MAP Agricultural Green and High-Quality Development Index ("the Green Index"). During the process, we fully balanced between the needs of achieving sustainable development and ensuring agricultural supply, and followed the principles of materiality, systematic, independence, and applicability. The Green Index uses four primary indicators, including Resource Conservation, Environmental Friendliness, Industry Efficiency, and Green Supply, and 12 secondary indicators to measure the practices of green development by farmers from multiple dimensions. Scores of these indicators were calculated to reach a Green Index score, with a total score of 100, based on their relevant weights and in accordance with the research methodology.

| Weight determination of indicators

The weights of the Green Index indicators are determined by using the expert scoring method following the Delphi methodology. Experts in the agricultural sector are selected to determine the weights independently, and the weights for the indicator are calculated based on their input statistically.

| Calculation of the green index score

Based on the survey data and the definition of indicators, we obtained the scale values of the secondary indicators, which are processed with the entropy weighting method to get the score of the secondary indicators, and calculate the scores of the primary indicators from the weighted sums of the secondary indicators before getting the Green Index score eventually.

Calculation Method of the Green Index Score and the Primary Indicators



Please scan the QR code to see the calculation methodology

Calculation Method of the Secondary Indicators



Please scan the QR code to see the calculation methodology

2023 MAP Agricultural Green Development Survey

In 2023, MAP conducted online surveys on the agricultural production of 12 crops, including rice, corn, wheat, soybeans, apple, citrus, grape, strawberry, potato, silage corn, cotton, and alfalfa, covering three major grain crops and most common cash crops. The survey covered both farmers who had MAP services ("MAP farmers") and those had no MAP services ("non-MAP farmers").



provinces covered

23

3,860

valid questionnaires received, including

2,152 questionnaires from MAP farmers and

1,708 questionnaires from non-MAP farmers

117,000

ha of farmland surveyed, including

75,894 ha of MAP farms and

41,376 ha of non-MAP farms



Based on the analysis of four primary indicators calculated from nation-wide survey data, the average Agricultural Green High-quality & Development Index score of MAP farmers in 2023 is 45.84, which is 19.18% higher than that of non-MAP farmers surveyed.

Analysis of survey results

2023 Primary Indicators Score



MAP Non-MAP farmers farmers

54.44



MAP farmers farmers







Protecting the ecological environment is a fundamental strategy that fosters productivity while maintaining harmony between people and nature. It is an essential approach towards realizing efficient and effective use of resources, and the effective protection and efficient utilization of agricultural resources such as arable land and water.

MAP focuses on addressing the major issues and challenges related to the utilization of agricultural resources. Through the adoption of various innovations and green practices, MAP enhances the management of standardized agricultural production throughout the entire process and helps farmers improve the efficiency of the utilization of key production factors such as land, water, and labor.



Indicator definitions

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efficiency

P

Labor

The yield of a crop during a single production cycle per unit of farm land.

The ratio between the total yield of a crop to the total amount of irrigation water used during a single production cycle. It is related to factors such as the natural conditions of the irrigation area, conditions of irrigation facilities, water management, and irrigation technology used.

The ratio of crop yield to its corresponding labor cost in a single production cycle of the crop. The lower the production cost, the higher the labor productivity. The survey includes the cost of hiring labors and leasing agricultural machinery, and productivity the payment to agricultural machinery operators, in the calculation of labor cost.

Survey findings





Land productivity (kg/ha)



Water utilization efficiency (kg/ton)



Labor productivity (kg/yuan)



| Indicator interpretations

MAP provides whole-process technical services to farmers, helping them use land resources scientifically and efficiently, apply agronomic techniques reasonably, and improve yield per unit of farmland. This support will increase land production efficiency, ensure stable and high-yield food supply, and improve food security.

Land productivity (kg/ha)

Rice	Average improve	ment 8.29%
MAP farmers	RERERERE	634.64
Non-MAP farmers	****	586.06
Soybean	Average improve	ment 9.01%
MAP farmers	*****	201.89
Non-MAP farmers	****	185.20
Apple	Average improvem	ient 16.42%
MAP farmers	6767676767676767	2272.15
Non-MAP farmers	C C C C C C C C C	1951.72
Grape	Average improvem	nent 18.98%
MAP farmers	he he he he he he he he	2596.00
Non-MAP farmers	for for for for for for fo	2181.82
Potato	Average improvem	ient 14.27%
MAP farmers	••••	3725.79
Non-MAP farmers	იიიიიი	3260.39
Silage corn	Average improvem	ient 36.44%
MAP farmers	*******	2003.83
Non-MAP farmers	亲亲亲亲亲亲	1468.62



Improving the utilization rate of saline-alkaline land through Land tailored solutions in accordance with regions and crop varieties Productivity

China has 100 million ha of saline-alkaline land, of which 33.3 million ha have the potential for development and utilization¹. Enhancing the comprehensive utilization of saline-alkaline land is of great significance for increasing regional grain production capacity and ensuring food security.

MAP has made notable progress in the R&D and demonstration of technologies for the comprehensive utilization of saline-alkaline land.

In Dawukou District, Shizuishan City, Ningxia Autonomous Region, in response to poor seedling emergence, high seedling mortality, and low yields in the area along the Yellow River, MAP identified soil constraints, and developed tailored improvement plans with focus on salt-tolerant varieties selection, seed germination, seedling emergence in the drip plots, root resistance to physical stress, and integration of agricultural machinery and

agronomy. Combining technologies such as water and salt transport in subsurface pipes and water-fertilizer integration management, MAP succeeded in reducing the soil pH value by 0.3-0.8 units, increasing the soil nutrient content by 3%-7%, and transforming lowyield saline-alkaline land into medium- to high-yield land, and saw significant increase in the yield and improvement in the quality of crops such as liguor-making sorghum, forage sorghum, and soybeans. Hence the once saline-alkaline land is greatly improved and efficiently utilized.

In the future, MAP will adopt customized measures based on the conditions of salinealkaline land in different regions such as Inner Mongolia, Shandong, Jilin, and Hebei. By growing suitable varieties on the land and selecting suitable land for the varieties, MAP will continuously improve the soil quality, increase crop yields on the saline-alkaline land, and boost local grain production.



The high-guality liguor-making sorghum growing on saline-alkaline land in Dawukou

¹ Lu Lu, Chen Lei. Removing Barriers for Saline-Alkaline Land and Adding Strength to the Granary of China - An Overview of Comprehensive Development and Utilization of Saline-Alkaline Land in China [J]. China Agri-Production News, 2023(15):4-8.

According to a 2023 survey, the land productivity of MAP farmers was on average

15.26%

higher than that of non-MAP farmers



The 2023 survey

results present that

the water utilization

efficiency of MAP

25.97%

higher than that of

non-MAP farmers

farmers is, on

average,

Water shortage has become a prominent issue constraining the high-yield farming and efficient development of agriculture. Improving the utilization efficiency of water is crucial for ensuring food security. MAP has been committed to promoting water-saving irrigation technologies and developing efficient and water-saving agriculture.

In 2023, in Inner Mongolia, MAP promoted the EPC+O model, customized irrigation plans for different types of farmlands and actively participated in the construction of high-standard farmlands. Through the refined pipeline network and intelligent management, MAP implemented



Smart Control Irrigation System Plan



Labor productivity

The 2023 survey results present that the labor productivity of MAP farmers is, on average,



higher than that of non-MAP farmers

To meet the development needs of large-scale farms for efficient agricultural production, it is urgent to enhance labor productivity. MAP has been committed to improving agricultural labor productivity through the development of new quality productive forces.

The development, application, and promotion of digital agricultural technology have always been a core part of the MAP model. The Smart Farming APP developed by MAP offers a wide range of services, including weather forecast, remote sensing for field inspections, soil fertility evaluations, and IoT control, to assist farmers in scientific planting and precision management. It is estimated that, with the help of the APP, small and medium-sized farmers and agronomists can each effectively manage an average of 466.67 ha. of land, significantly increasing agricultural productivity.

Promoting smart irrigation to improve water utilization efficiency

the low-flow drip irrigation and smart control irrigation system to improve irrigation uniformity. Compared to traditional small-scale drip irrigation, the system can reduce water consumption by 30%-50%. A single irrigation system can cover over 66.67 ha. of farmland and significantly reduce labor costs. Meanwhile, the even and efficient irrigation system also contributes to yield increase of about 15%.

In addition, MAP has also promoted water-saving technologies and precision irrigation such as drip irrigation in Hebei, Shandong, and Shaanxi, to improve the water utilization efficiency and support sustainable development.



Promoting digital tools to improve farming quality and efficiency

Yang Shihua, a farmer on the Xingkai Lake farm in Heilongjiang Province, has been using the MAP Smart Farming APP to manage her 800-ha. soybean farm for three consecutive years. She uses it to record farming data, observe crop growth with the remote sensing feature, access weather forecasts, and identify pests and diseases; her field inspection efficiency has increased by 70%.



Farmer Yang Shihua is reading remote sensingbased crop growth diagnosis





"To protect the environment is to protect our productivity, and to improve the environment is to develop our productivity." To promote the full-process green transformation of agriculture, it is essential to adhere to principles of both resource conservation and environmental protection. By doing so, we can strive to establish a new agricultural development pattern that fosters harmony between people and nature.

MAP strives to vigorously promote advanced technologies, such as soil nutrient management and green prevention and control of pests, with the aim of reducing farmers' reliance on chemical fertilizers and pesticides, and optimizing the growing environment of crops. We also attach great importance to climate change, and are committed to contributing to the reduction of agricultural greenhouse gas emissions.



The crop yield that can be produced per unit of fertilizer application, which varies with factors such as crop varieties, soil conditions, cultivation **Fertilizer utilization** management, and fertilization techniques. efficiency

> The crop yield that can be produced per unit of pesticide application, which varies with factors such as the application time and the application tools used.

Pesticide utilization efficiency

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Y



Carbon intensity

The direct or indirect greenhouse gas emissions caused by various agricultural activities during the entire production process of producing a unit of crop yield. The survey includes seeds, fertilizers, pesticides, plastic films, and energy consumption of agricultural machinery and irrigation as carbon emission sources.

Survey findings





Fertilizer utilization efficiency (kg of crop yield / kg of chemical fertilizer used)



Pesticide utilization efficiency (kg of crop yield / ml of pesticide used)



Carbon intensity (kg of CO2e/ton of crop yield)



| Indicator interpretations

MAP promotes fertilizer reduction and efficiency improvement through technological innovation and customized solutions. MAP focuses on the research and development of new and efficient fertilizer product solutions, promotes scientific fertilization technology through soil testing, effectively improves soil nutrient absorption rate and fertilizer utilization efficiency, and reduces application through core technologies such as microbial agents, phosphorus efficiency enhancement, and membrane for controlled release.

Fertilizer utilization efficiency

(kg of crop yield / kg of chemical fertilizer used) 2021-2023 MAP farmers
Non-MAP farmers All crop 1 9.9% 1 27.2% .10% 2021 2023 2022

The fertilizer utilization efficiency of MAP farmers has been improving year by year, 23.12% higher than the average of the previous two years in 2023.

Fertilizer utilization efficiency

(kg of crop yield / kg chemical fertilizer used)	2023
Av	erage improvement
	2.36% Rice
	14.91% Corn
	34.56% Citrus
	35.43% … Apple
	65.44% Potato
	22.14% ··· Silage corn

Fertilizer utilization Promoting efficient fertilization, advancing efficiency green and low-carbon development

Under increasing resources and the environment constraints, MAP adheres to the pursuit of green development. By developing efficient nitrogen fertilizers, biological formulations and other green products, and promoting technologies such as soil testing and integrated water and fe rtilizer technology, MAP aims to reduce fertilizer usage while improving efficiency and to promote sustainable agricultural development.

The core Masterbatch technology. To enhance the efficiency of soil testing and fertilizer application, MAP has developed and continuously upgraded the core Masterbatch technology that improves fertilizer application efficiency. By providing farmers with customized fertilizer solutions. MAP aims to reduce fertilizer use and increase efficiency. By 2023, this technology has been widely applied to 416,666.7 ha. of farmland all over China. In comparison to farmers using traditional fertilizers, MAP has helped farmers cut the use of nitrogen by 5.9%, phosphorus

by 7.6%, and overall fertilizers by 15,542 metric tons (pure) or 4.07%.

The precision diagnosis and fertilization technology. To address issues associated with traditional fertilization methods such as the imprecise fertilizer application, excessive fertilizer use, and nutrient imbalances, MAP has developed and promoted the precision fertilization technology. It measures the nutritional status of crop leaves, monitors and diagnoses the nutrition level in plant growth in real time, develops customized fertilizer application plans based on specific needs, and properly adjusts nutrient ratios accordingly, to meet the optimal growth requirements. For example, when it comes to silage corn cultivation in Inner Mongolia, MAP farmers used 9% less nitrogen fertilizers and 14% less phosphorus fertilizers than non-MAP farmers.



Enhanced growth



Leaf nutrient status analysis with the core Masterbatch technology

The 2023 survey results present that MAP farmers use

22.72%

less fertilizers than non-MAP farmers on a per-unit yield basis



Pesticide utilization efficiency

The 2023 survey results present that the average pesticide utilization efficiency rate of MAP farmers is

29.91%

higher than that of non-MAP farmers

The 2023 survey

results present that the carbon intensity

of MAP farmers is

19.38%

lower than that of

non-MAP farmers

on average

In 2023, MAP made digital crop protection development and application one of its top priorities. Empowered by AI technology, MAP independently developed the crop disease, pest and weed image recognition technology and the real-time risk alert technology that are applicable to a great variety of diseases and pests. They can accurately identify 226 diseases, 394 pests, and 419 weeds for major grain crops and cash crops such as citrus, apples, and grapes, with the average accuracy rate of 80%. Furthermore, advanced monitoring algorithms were employed to identify complex symptoms and provide corresponding crop protection recommendations. Using the forecast data, agronomists can provide crop protection solutions to farmers, which can enhance pesticide efficiency by 15% and diminish the risk of crop damage from chemicals by 10%. MAP's AI-empowered precision crop protection solution combines AI-empowered weed identification technology with intelligent control of agricultural machinery. It enables variablerate pesticide spraying based on weed density,

Carbon emissions intensity

To address the issue of farmland N₂O emissions in the Huang-Huai-Hai region, MAP has collaborated with the Institute of Environment and Sustainable Development in Agriculture for applying the greenhouse gas (GHG) emissions reduction technologies in the wheat-maize rotation and establishing and promoting a GHG emissions reduction model in dryland areas of northern China. Through various technical measures such as full straw return, formulated fertilization, waterfertilizer integration, compound bacterium agent, fertilizer efficiency enhancement, and planting of nectar-rich flowers, MAP effectively reduced GHG emissions in crop production without compromising the yield.

In 2023, monitoring data from MAP farms in Huantai showed that compared to conventional maize cultivation practices in the area, MAP's

Developing digital crop protection solutions with AI to enhance pesticide efficiency

resulting in a 10% cost reduction compared to the industry average. This approach is not constrained by crop types or planting requirements, meeting the demands for lightweight operations and sustainable development. In 2023, the Hailar Sugar Beet Farm in Inner Mongolia applied this technology which resulted in reducing pesticide usage by 15 liters per mu and lowering cost of RMB 60,000 per 133.3 ha. of farmland.



> Identify the citrus leaf disease by taking a photograph

Strengthening collaboration with research institutes to reduce greenhouse gas emissions

GHG emissions reduction technology model can reduce nitrogen input by 27.1% and N2O emissions by 39.91%.

Furthermore, MAP actively developed and promoted green products and technologies such as efficient nitrogen fertilizers, the combined use of bio-organic and chemical fertilizers, and biological preparations to help farmers achieve low-carbon and high-efficiency production.



Setting up the monitoring device on a deom farm





The 14th Five-year Plan for Promoting Agricultural and Rural Modernization puts forward a development goal that prioritizes the steady improvement of the quality, efficiency, and competitiveness of the agricultural sector in China.

MAP constantly innovates and improves agricultural service models to help Chinese farmers improve the quality of agricultural produce and farming productivity. By doing so, we aim to improve standardization and efficiency, boost crop yields, reduce input costs, help farmers increase their income through multiple channels, and further explore the potential to improve quality and efficiency.

Indicators



Unit input-output ratio Total cost of production of the crop / Total yield

of crop (yuan / kg) Production

standardization rate

Area of farmland with standardized production / Total area of farmland (%)

Indicator definitions



- Dia

Unit input-

output ratio

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Production

standardization

rate

The total income per unit of farmland generated by farmers through the sale of crops. This indicator measures the benefits farmers receive from crop cultivation

Refers to the ratio of total planting cost to total crop output in the agricultural production process within a single crop production cycle. The smaller the value the better. The investment in planting in the survey includes land rent, seeds, fertilizers, pesticides, labor, agricultural machinery, irrigation, plastic sheeting, and other expenses.

Standardized production refers to standardized activities of the entire agricultural industrial chain. Standards for key industrial chain activities are formulated, revised and implemented to ensure necessary and reasonable level of standardization.







Unit input-output ratio (yuan / kg)



52.08

MAP

farmers

19.16 % Average decrease with MAP services for unit inputoutput

Production standardization rate (%)



By enhancing the application efficiency of key products of seed, fertilizers, pesticides, and machinery, and providing farmers with fullprocess services ranging from cultivation, growing, management to harvesting, MAP help farmers improve planting efficiency, reduce cost, and improve both crop quality and yield.

(yuan / kg)

Rice

National agricultural product output input 2.87

39.05% Average reduction

National agricultural product output input . 3.08

Citrus

6 9.50% Average reduction

Cotton

product output input 11.50

2.14% Average reduction

Indicator interpretations

Unit input-output ratio

The reduction of costs in producing unit output within the crop production cycle is a highly effective way to improve the industry efficiency of agricultural green development.



Notes: Notes: 1. National statistical data is sourced from the National Agricultural Product Cost and Profit Data Compilation 2023. 2. The production cost surveyed in this report does not include the discounted cost of household labor and the cost of land rent.



Establishing a high-quality MAP grain production Income per ha of Farmland base and diversifying farmers' income sources

MAP is committed to increasing farmers' output and income by linking upstream grain production and downstream processing of the industry chain. MAP collaborated with Wuliangye Group in Sichuan province to remove obstacles in the production of high-quality grains for brewing liquor. We customized a service system covering "seeding, harvesting, storage, transportation, and delivery", and provided comprehensive solutions and professional services that combine improved varieties and good methods. MAP has developed five special crop nutrition formulas and 16 crop protection technologies, which are applied in Wuliangye MAP Grain Production Base, and have significantly improved the quality of grains and helped Wuliangye Group achieve lifecycle quality control.

Farmers in the base signed planting contracts with MAP and used the wheat varieties and whole-process technical services that MAP

suggested. As a result, the average wheat yield increased by 10%-16%, with prices exceeding the market average by RMB 0.04-0.10/kg, leading to an additional income of RMB 1,800-2,250 per ha.

MAP's technical services not only increased the income of farmers, but also improved the quality of grains for brewing liquor, and thus won recognition from local governments, winemakers, and farmers.



Wuliangye MAP Grain Production Base



Order-based Farming: Small Income per ha of Farmland Lemons, Large Industry

MAP and Mixue Ice Cream & Tea have jointly launched a model of integrated service for the whole lemon planting industry chain. The service model covers more than 2,867 ha of farmland. Mixue Ice Cream & Tea is responsible for sales with minimum purchase price, while MAP offers full-process planting solutions and professional services. This collaboration has expanded local lemon planting industry, directly boosted the income of growers, deeply integrated the upstream and the downstream of the industry chain, and contributed to local rural revitalization.

In September 2023, Mixue Ice Cream & Tea signed the purchase contract with the first batch of growers utilizing MAP services. The lemons harvested were then graded and purchased at the price varying from RMB 3.6 to RMB 5 per kg, depending on their quality, which was

far higher than local market price. Moreover, with MAP's full-range technical services, the average yield increased by 11,250 to 15,000 kg per ha, or 20% to 40%, with an additional income of RMB 30,000 per ha. In 2023, MAP delivered 25 million kg of high-quality lemons with low pesticide residue to Mixue Ice Cream & Tea, meeting the latter's demand for stable supply of lemons. This initiative ensured safer lemons, more income for farmers, and a more prosperous industry.



MAP Mascot and Mixue Ice Cream & Tea Mascot

According to the data of a 2023 survey, MAP farmers saw their income per ha of farmland increase by

16.26%



According to a 2023

survey, the unit

of MAP farmers

19.16%

compared to that of

non-MAP farmers

decreased by

input-output ratio

Unit Input-Output Ratio

MAP continuously improves its standardized full-process services and customizes comprehensive technical solutions to reduce the crop input, increase the unit yield, and enhance efficiency in agriculture.

Guangliyuan Agricultural Technology Co., Ltd., located in Taipusi Banner, Inner Mongolia Autonomous Region, grows potatoes on an area of 253 ha, but due to the lack of standardized and scientific planting plans, it has troubles from time to time such as allocating crop nutrition in wrong proportion or doing pest control at the wrong time. This not only made it difficult to control cost but also directly reduced crop yield and economic benefits. After conducting on-site surveys, soil testing, and considering local climate conditions, MAP Zhenglan Banner Service



MAP farmers enjoyed a good harvest

Improving full-process services to reduce cost and boost efficiency of planting

Center customized a standardized wholeprocess solution for the company, covering the entire process from the provision of seed potatoes to the sales of agricultural produce. MAP combined measures such as highquality seed breeding, efficient fertigation and effective pest control, and increased the average yield by 28% per ha, while reducing the fertilizer and pesticide use by 20% per ha; Guangliyuan's income also increased by over 50% per ha.

Zhao Xinhua, General Manager of Guangliyuan, said, "MAP's technical services are indeed professional, and the whole-process solutions it provided can address all the issues we faced in crop farming. In the future, we will deepen cooperation with MAP for greater mutual benefits."



Production Standardization Rate

Advancing the "Co-op Service Model": Exploring standardized agricultural production

While delivering services to farmers, MAP discovered that many villages had a relatively low income, limited income source, and few opportunities for industrial development. In response, MAP actively explored cooperation with rural collective economic organizations, and developed the "Co-op Service Model" based on comprehensive solutions.

Under the "Co-op Service Model", the Party Committee at the village level and the villagers' committee would establish the village cooperative or rural collective economic organizations, and consolidate the land of farmers who are unwilling or unable to cultivate it with full respect for the farmers' wish. They then entrust social service providers like MAP to provide services, including variety selection, crop nutrition, precision crop protection, agricultural machinery services, financial assistance (in collaboration with licensed third-party financial institutions), orderbased sales, and digital agriculture. This model enhances land efficiency through scale operation and helps village collectives expand the income source. Moreover, through standardized services, it engages small and medium-sized farmers into the modernization of agriculture, allowing them to benefit from the development.

In Zhaozhuangzi Village, Mengcun Hui Autonomous County, Hebei Province, MAP provided standardized and comprehensive planting solutions, including improving saline-alkaline soil, introducing droughtresistant varieties, promoting seed coating, and experimenting no-till farming techniques, to help the village collective cultivate the farmland effectively. In 2023, thanks to the "Co-op Service Model", the village collective's income increased by RMB 290,000, with farmers receiving an additional income of RMB 5,520 per ha.





Joint meetings for promoting centralized land management with local government

In 2023, MAP's "Co-op Service Model" had been implemented in

1.060

villages of

260 counties covering an area of

38,800 ha

and its comprehensive results were widely recognized by local governments, rural collective economic organizations, and farmers.

In 2023,

MAP has completed a digital farm of

200

hectares in Huantai County

8

sets of standard planting plans implemented

digital command platform established

7.6%

average cost reduction and income increase achieved

Significant improvements

have been made in government decision-making and management efficiency

Production Standardization Rate

Leveraging "the EPC+O model, onlineoffline integration, and multi-channel data aggregation," MAP has developed the Digital Village Model tailored for local governments, featuring collaboration between the government, enterprises, and farmers, serving as an integrated digital platform for agriculture and a data system covering production, services, management, credit, and marketing. As a result, agricultural production management is optimized through combining the use of digital maps, database, data tables, internet, and data platform. This model promotes the intelligent, digital upgrading of regional agricultural business operations and government administration. It improves agricultural production efficiency, reduces production costs and enhances the government's administrative and decisionmaking efficiency, effectively boosting regional agricultural production efficiency and rural revitalization in all respects.

In Huantai County, Shandong Province, MAP has built a 200-ha digital farm and a comprehensive rural digital agriculture platform, to meet the local government's needs for digital and intelligent development and



Huantai digital agriculture and smart village platform

Building digital villages to enhance the efficiency of regional industries

to help local farmers optimize production, management and data. On the digital farm, MAP demonstrated eight sets of standardized planting solutions to growers. The "Huannongbao" app was developed to help farmers, on which there are 30 agricultural service providers to provide services across the industry chain. As a result, with wheat and corn rotation, farmers reduced the cost and increased the income by over 7.6%. In addition, it developed a data decision-making system for the government, which provides access to 23 types of data from local agricultural institutions and collects basic data on "the farmers, finance, and land" of eight towns. We also established digital user profiles and land fertility files for over 18,000 ha of cultivated land, created planting records for over 1,000 planting households, and advanced the establishment and application of big data platforms in government decision-making and service upgrade across the industry chain. Furthermore, we built high-standard farmland, agricultural machinery and IoT management systems, to further enhance the government administration efficiency. In 2023, this model was awarded for the "Best Case of Agricultural Service of China."



Green Supply According to No. 1 document of 2024 of the Ministry of Agriculture and

Rural Affairs of the People's Republic of China, we shall "increase the supply of green and high-quality agricultural products." To this end, we need to advance the program of Superior Varieties, Quality Improvement, Brand Building and Standardized Production (VQB-S) for agricultural production and agricultural products, and accelerate the construction of agricultural production bases for green, organic products, local signature products, and branded, specialty, high-quality and novel products.

Adhering to the guidance of "guality and green agriculture", MAP actively integrates and promotes green production technologies and practices. These practices include promoting variety screening, quality improvement, brand building and standardized production, and the application of regenerative agricultural practices, to encourage the development of green, high-quality, branded and unique agricultural products.

Percentage of highquality agricultural products

The output value of high-quality agricultural products / Total output value of all agricultural products (%)

Use of high-guality varieties

Area of farmland growing highquality crop varieties / Total growing area of the crop (%)

Indicator definitions

30%

30%

Regenerative agricultural practices include conservation tillage (no tillage or lesstillage, straw covering, green covering, etc.), soil testing and fertilizer formulation, and green crop protection (physical and biological), etc. During the survey, areas with one or more such practices are considered as areas with regenerative agricultural practice.

The ratio of the output value of high-quality agricultural products to the total output value of all agricultural products. The term "high-quality produce" used in the survey refers to product produced with premium-pricing orders.

varieties

High-quality varieties refer to crop varieties that have valid national or provincial approval for growing in suitable ecological areas.

Survey findings

Green supply



Application of regenerative agricultural technologies (%)



Percentage of high-guality agricultural products (%)



Use of high-quality varieties (%)



Average improvement with MAP services for use of high-quality

Rice MAP Wheat MAP

Apple MAP

farmers Grape MAP

Potato

MAP

MAP farmers

Indicator interpretations

Percentage of High-Quality

MAP has utilized blockchain and big data technologies for many years to establish the MAP beSide guality control and traceability system. Consumers can directly access information about the farm-to-fork movement of agricultural products by scanning the MAP beSide QR code. With the endorsement of MAP beSide, high-quality agricultural products can be sold at a premium price they deserve, which will not only increase the farmers' income but also enhance the food security in the stages of processing, circulation, and consumption. At present, more than 200 highquality products, traceable on and endorsed by the MAP beSide system, have entered the market.

19.14 % 28.28 farmers Average Non-MAP 9.14 improvement farmers 18.34 8.85% farmers Average Non-MAP 9.49 improvement farmers 35.89 8.73% farmers Average Non-MAP 27.16 improvement 23.05 **19.20%** farmers Average Non-MAP 3.85 improvement farmers 45.22 14.13% farmers Average Non-MAP 31.09 improvement farmers Silage corn 30.11 27.91% Average Non-MAP 2.20 improvement farmers

Percentage of high-quality agricultural products (%)

Application of Regenerative **Agriculture Technology**

Agricultural production is experiencing a severe challenge of declining biodiversity. The decrease in biodiversity is a drag on the healthy and sustainable development of agricultural ecosystems. In response, MAP actively explores effective ways to utilize fractional farmland, such as promoting the planting of nectarproducing flowers, which has increased farmland biodiversity and improved crop yield and quality.

Hubei Province is a main producer of oilseed rapes in China, However, it suffered from low pollination efficiency and large amount of pesticides application in the field for a long time. In response, MAP initiated the "Operational Pollinators" project, and grew wild flowers that are highly adaptable to the

Difference in insect population between experimental and control groups



Exploring the Utilization of Fractional Farmland to Conserve Biodiversity

local environment, easy to plant and grow, such as the Cosmos, Spider Flower, Borage, in fractional areas around oilseed rape (or rice) fields, such as field margins and roadsides. As a result, the diversity of the surrounding farmland environment was greatly enhanced.

While ensuring crop yield, quality, and farmers' income, the project has significantly caused an increase in pollinators and promoted ecological balance. According to statistics from the Institute of Apicultural Research (IAR), Chinese Academy of Agricultural Sciences (CAAS), after the implementation of the "Operational Pollinators" project, the number of honeybees in the surrounding farmland increased by 654.55%, and the number of other beneficial insects increased by 11%.

😑 bee 🥚 butterfly 🕚 fly 🕚 moth





Application of Regenerative

In 2023, the MAP Tianjin Center transformed the original saline-alkaline land into a demonstration farm for the whole industry chain standardization of rice production, featuring standardized, mechanized, informationbased and intelligent planting, harvesting, and sales. It was recognized as a national demonstration farm for the whole industry chain standardization and modern agriculture.

The demo farm utilized comprehensive techniques such as land preparation, biodegradable agricultural films, and planting of nectar-producing flowers to improve biodiversity. In this way, the physical and chemical properties of soil are enhanced to prevent soil salinization and the farmland environment are protected for the growth of high-quality agricultural products. The pH value of the farmland decreased from above





modern agriculture

MAP Tianjin Center won the award of national demonstration farm for the whole industry chain **Agriculture Technology** standardization and modern agriculture

8.5 to 7.5, and the saline-alkaline land once overgrown with reeds has been transformed into fertile fields suitable for rice cultivation. By selecting superior varieties, customizing solutions, and providing agricultural machinery, MAP built a rice production base that is standardized, mechanized, and modern.

Through the adoption of MAP beSide quality control and traceability system, farmers increased their income by over 10%. and increased yield per unit area on the demo farm of Xiaozhan Rice from the initial 6,000 kg/ha to a maximum of 10,500 kg/ ha, producing rice that meets the national first-grade standard. Building upon these significant achievements, MAP has widely promoted this practice in Baodi, Jinnan, and Ninghe in Tianjin, serving over 11,333 ha of Xiaozhandao rice fields annually.

> MAP Tianjin Center, a national demonstration farm for the whole industry chain standardization and



Percentage of High-Quality **Agricultural Products**

China is the world's largest producer of kiwifruit, with an annual output of 2.8 million metric tons, but also imports more than 120,000 metric tons of high-end ready-to-eat kiwifruit a year. Due to lack of precision control in storage and delivery, homegrown kiwifruit varies in quality, and is sold at a much lower price than the imported ready-to-eat fruit.

Over the course of three years, MAP has integrated advanced technologies at home and abroad, conducted research on fruit picking and post-harvest ripening control, had a good command of the physiological starchto-sugar change during the ripening process, and accordingly developed the ready-to-eat and controlled ripening technology as well

The Ready-to-Eat Kiwifruit Technology Enhances the Fruit Quality

> as specialized equipment. This technology enables precision control of the kiwifruit ripening process, resulting in a 5% increase in sugar content and extending the edible window of the ready-to-eat fruit to over 15 days. This makes hard fruit ready-to-eat, comparable to imported products in quality. Moreover, MAP has taken the lead in formulating the first social organization quality standard for delicious ready-to-eat kiwifruit in China. The formulation and application of this standard, along with the development of relevant technology, have directly and significantly increased the income of fruit growers using MAP services, thereby promoting the high-quality development of the regional kiwifruit industry.



8288272 2.4



Farmers can increase

approximately RMB

1,320 per ha

their income by

each season

Agricultural Products

To reduce the risk of excessive cadmium in rice, MAP collaborated with top scientists, introduced the low-cadmium rice variety "Anliangyou 2" and developed special planting solutions for trial planting. Through biotechnological breeding and genetic improvement, this variety exhibits weak adsorption of cadmium and low accumulation of heavy metals, ensuring the quality and safety of rice products.

MAP farms and multiple demonstration sites show that this variety's growth period is 10 days shorter than existing common varieties. The cadmium content in the stems, leaves, and rice of this variety is 84.95%, 91.49%, and 71.49% less than in local conventional varieties (such as Quanyou 1606), respectively.



Traceable ready-to-eat kiwifruit



> A joint production plant of Sinochem Agriculture MAP and Jiajiayue Group Co., Ltd.



Anliangyou 2

38

Percentage of High-Quality Cultivating high-quality, low-cadmium rice by applying matching technology in introduced varieties

Cadmium content at all test sites is within the approved limits. Farmers can increase their income by approximately RMB 1,320 per ha each season.

In the future, the combination of improved varieties and planting methods can fundamentally eliminate the issue of excessive cadmium in rice , produce high-quality, lowcadmium rice, increase the green rice supply and promote the high-quality development of the industry.

Experts gave on-site guidance on a demonstration farm growing the low-cadmium rice variety

Summary and Outlook

In 2023, MAP continued to explore ways to pursue green and sustainable agriculture. Significant progress was made in promoting the efficient use of land and water resources, reducing the use of fertilizers and pesticides, implementing the Superior Varieties, Quality Improvement, Brand Building and Standardized Production (VQB-S) Action, and applying other green agriculture technologies. Through proactive measures, we improved the resource utilization and farming efficiency. Compared with non-MAP farmers, MAP farmers saw an increase in the land productivity by an average of 15.26%, fertilizer and pesticide utilization efficiency by an average of 29.66%, and income per ha of farmland by 16.26%, while GHG emissions were reduced by 19.38%.

By crop types, specialty crops such as potatoes and alfalfa continued to lead in terms of scale and in the Green Index, and cash crops such as citrus and apples showed significant overall improvement compared to the previous year. However, the overall score in the Green Index was less than 50, leaving much room for improvement.



In the future, MAP will continue to prioritize food security, resource security, and ecological security, and develop and apply the regenerative agriculture technology to elevate the Green Index score of field and cash crops. We will also explore the implementation of the green and low-carbon MAP model to help farms reduce carbon emissions while increasing efficiency. In this process, we will double down on recycling agricultural waste, and seek continuous innovation to promote the green and high-quality development of agriculture in China.

About This Report

| Reporting Period

The survey data in the report was collected from July to September 2023, mainly covering the full growth period of crops in 2022. All other data cited was as of the end of December 31, 2023 unless otherwise noted.

Source of Data

The Surveyed Areas by Crops:

Wheat:	Anhui, Hebei, Henan, Shandong, Shaanxi, and Shanxi
Corn:	Anhui, Gansu, Hebei, Henan, Heilongjiang,
	Shandong, Shaanxi, Xinijang, and Shanxi
Rice:	Anhui, Heilongjiang, Hubei, Hunan, Jilin,
	Jiangsu, Liaoning, Sichuan, and Chongqing
Soybean:	Anhui, Jiangsu, Heilongjiang
Citrus:	Fujian, Guangdong, Guangxi, Hunan,
	Jiangxi, Sichuan, Yunnan, and Chongqing
Apple:	Gansu, Shandong, and Shaanxi
Grapes:	Anhui, Guangdong, Guangxi, Hebei,
	Jiangsu, Sichuan, and Yunnan
Strawberry:	Anhui, Henan, Jiangsu, and Shandong
Potato:	Inner Mongolia
Silage Corn:	Jilin and Inner Mongolia
Cotton:	Xinjiang
Alfalfa:	Inner Mongolia

Crop	Valid Questionnaires	MAP Farmers	Non-MAP Farmers
Wheat	549	285	264
Corn	1256	667	589
Rice	729	426	303
Soybean	126	79	47
Citrus	377	245	132
Apple	213	141	72
Grape	104	60	44
Strawberry	80	43	37
Potato	97	47	50
Silage Corn	136	61	75
Cotton	133	68	65
Alfalfa	60	30	30
Total	3,860	2,152	1,708

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Independent certification statement

I. Basic Information of the Assessed and Certified Entity

Name	Sinochem Agriculture Holdings		
Address	Room 818, No. 28 Fuxingmennei Street, Xicheng District, Beijing		
Sector	Agriculture	Main Products	Agricultural services
Ownership	Domestic investment (☑ state-owned □ collective □ private) □ Sino-foreign joint venture □ Funded by Hong Kong, Macao, and Taiwan investment □ Wholly foreign-owned		
Unified Social Credit Code	91110102MA001X7QX7		
II. Informat	ion about the Third	-party Organization	
Name	Institute of Agricultural Resources and Regional Planning, CAAS		
Address	No. 12 Zhongguancun South Street, Beijing		
Contact	Zha Jing	Mobile phone	13552409993

Mobile phone

Report	Yin Changbin	Mobile phone
Reviewer	A VARANCE STATES AND	

III. Evaluation and Certification Results

Ren ling

Basi	C

Certification

Opinion

Requirements

Head of Report

Preparation Report

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13641058813

The Institute of Agricultural Resources and Regional Planning, CAAS (hereinafter referred to as "IARRP"), entrusted by Sinochem Agriculture Holdings, conducted an independent assessment and certification of the *MAP Green and High-Quality Development Report 2023* (hereinafter referred to as "The Report") of Sinochem Agriculture Holdings. According to the *Measures for Monitoring and Assessing Green Development Level of Agriculture (Trial)*, IARRP verified the key information regarding the indicator system, index calculation methods, data research plan, resource conservation, environmental friendliness, industrial efficiency enhancement, and green supply related to the Report through on-site investigations, data reviews and search.

After verifying each indicator and data disclosed in the Report prepared by Sinochem Agriculture Holdings, we have reached the following certification conclusions:

 The Report complies with the 14th Five-Year Plan for National Agricultural Green Development and the requirements outlined in the Green Industries Guidance Catalogue 2023 regarding "Superior Varieties, Quality Improvement, Brand Building and Standardized Production (VQB-S) for Agricultural Industry," the promotion of high-quality new crop varieties, green organic certification, efficient and recyclable utilization of water resources, and green prevention and control of crop diseases and pests. The Report is well-founded and represents a concrete action in implementing the national strategy for green agricultural development.

2. The *Report* adopts random sampling and typical sampling to collect 3,860 sets of data for 12 crops. It measures Sinochem Agriculture MAP's green development level using a comprehensive index method from the aspects of resource conservation, environmental friendliness, green supply, and industrial efficiency enhancement. The *Report* is comprehensive, rigorous in logic, with detailed data, scientific indicators, appropriate methodology, and credible conclusions. It is distinctly professional and highly applicable.

3. IARRP believes that the *Report* provides a fair and objective statement about Sinochem Agriculture MAP's green development level. It objectively presents the achievements of green and low-carbon MAP practices. The *Report* can serve as a reference and decision-making basis for competent authorities in developing strategies for green agricultural development and promoting high-quality development in agriculture.

We hereby commit that a comprehensive assessment and certification has been conducted on the assessed and certified party in accordance with standardized and complete procedures. The materials submitted by the assessed and certified party are deemed authentic and valid. This assessment and certification report is objective, impartial, and supported by substantial evidence, faithfully and accurately reflects the findings throughout the assessment and certification process, and presents conclusions with utmost rigor. We fully acknowledge the objectivity of assessment and certification reports, and are willing to assume all liabilities and responsibilities associated therewith in the event of any fraudulent misrepresentation or intentional concealment of issues concerning the assessed entry during the assessment and certification process.

Annex: Institutional qualifications



Signature : (Official Seal)





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