

MAP 2020

Green Development Report

China Agricultural Green Development Research Center
Sinochem Modern Agriculture Co., Ltd.

MAP 2020 Green Development Report



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“

Sinochem Group has long been committed to building a resource-saving and environmentally friendly enterprise, insisting on the research, development and application of environmental protection and energy-saving technologies, and vigorously developing a circular economy. We fully implement the innovation and upgrade strategy, insist on technological innovation, and promote the upgrade of fuel quality, the improvement of green chemical production processes, and the production of environmentally friendly agricultural inputs.

The report to the 19th CPC National Congress also highlights the 'three rural issues' as a top priority for all, and calls for the implementation of the rural revitalization strategy. As the

'national team' in the agricultural industry, Sinochem Group will leverage the advantages of our relatively complete agricultural value chain to further explore the development of an integrated agricultural service platform of 'comprehensive services + high-quality agricultural inputs + digital service', promote the scientific use of agricultural inputs such as chemical fertilizers, seeds, crop protection and plastic film and provide farmers with integrated agricultural services that based on our expertise in planting technology, meteorology, finance, and agricultural products marketing, continuing to being a 'major force' in promoting agricultural production, helping farmers grow their income, and ensuring national food security.

Ning Gaoning

*Party Secretary and Chairman, Sinochem Group
Secretary of the Party Committee and Chairman,
China National Chemical Corporation*

Chairman, Syngenta Group

”



“

The coronavirus pandemic has revealed the fragility of the agriculture ecosystem. Like a pandemic, climate change is an inevitable threat that we must address before it is too late. As the economy and agriculture begin to adjust to the Covid-19 restrictions that have become part of life, we need to support a recovery for farmers that puts the fight against climate change and biodiversity loss at its core.

Since its launch the Good Growth Plan's principles and priorities have become deeply embedded in the way we do business at Syngenta. The plan was of course, just the start.

Erik Fyrwald

Chief Executive Officer, Syngenta Group

”



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A MAP harvest celebration event on Oct 25, 2020.

Syngenta Group



On January 5, 2020, Sinochem Group Corporation Ltd. and China National Chemical Corporation Ltd. announced that all the main assets of their subordinated agricultural sector will be injected into Syngenta Group Co., Ltd.

With a diversified team and the unparalleled business strength in its four major business units, Syngenta Crop Protection, Syngenta Seeds, ADAMA, and Syngenta Group China, the new Syngenta Group strives to provide the most extensive product portfolio and services in the agricultural field.



48,000
Employees



100+
Countries/regions



\$23 Billion
Global sales

Leading company in Crop Protection

Leading company in Seeds

Leading fertilizer supplier and distributor in China.

As of December 31, 2019



MAP Tianjin Center Farm



Zhenglanqi MAP Service Center

Syngenta Group China



Established on June 19, 2020, Syngenta Group China is one of the four global business units of Syngenta Group. It is China's largest supplier of agricultural inputs and a leading modern agricultural integrated service platform operator with four business units: crop protection, seeds, crop nutrition, and MAP (Modern Agricultural Platform) & digital agriculture.

Focusing on leveraging the synergies between its business units in China, Syngenta Group China takes the MAP business model as a central platform to provide comprehensive, quality products and services to farmers, customers and business partners across food value chain, to promote technological and business innovations in China's agricultural sector. We strive to work together with our stakeholders to create greater value and provide advanced solutions for China's rural revitalization with improved food safety, quality and digitalized traceability.



The Good Growth Plan of Syngenta

With great ambitions to improve the sustainability of agriculture and its business, Syngenta launched the first Good Growth Plan in 2013, setting six commitments and targets, which have been achieved in 2020.

Based on our unwavering commitments, Syngenta Group launched the new Good Growth Plan in 2020, setting four new pillars and quantitative targets until 2025, including to strive for carbon neutral agriculture, increase support for farmers, and respond to climate change.



Through the Good Growth Plan, Syngenta supports the United Nations Sustainable Development Goals (SDGs), with individual SDGs aligned with each of the four pillars of the new Good Growth Plan.

The Good Growth Plan 2020 Commitments & Results

Make crops more efficient	Rescue more farmland	Help biodiversity flourish	Empower smallholders	Help people stay safe	Look after every worker
Increase the average productivity of the world's major crops by 20% without using more land, water or inputs.	Improve the fertility of 10m ha of farmland on the brink of degradation.	Enhance biodiversity on 5m ha of farmland.	Reach 20m smallholders and enable them to increase productivity by 50% .	Train 20m farm workers on labor safety, especially in developing countries.	Strive for fair labor conditions throughout our entire supply chain network.
18.8%	14.1m	8.2m	26.5m	42.4m	99.0%
Land productivity increase ¹	Hectares of benefited farmland ²	Hectares of benefited farmland ²	Smallholders reached through training and sales ³	People trained on safe use ⁵	Suppliers included in sustainability and fair labor programs ⁶
			28.5%		
			Smallholder land productivity increase ⁴		
We have increased reference farm yields ahead of their benchmarks and recorded efficiency improvements of more than 20% for nutrients and pesticide field application.	We've already exceeded our 2020 target by almost 5m ha – and we're continuing to raise awareness for the importance of soil health.	Our biodiversity projects around the world continued to deliver measurable benefits to farmers and their wider communities.	We have reached over 20m smallholders and substantially increased their productivity, but there is still a way to go.	We have trained unprecedented numbers, exceeding our 2020 target of 20m by reaching 42.4m people.	We've covered 99% of our supply chain, and we're leading the industry to increase wages in the seed supply chain in India.

¹ On reference farms compared to baseline 2014
² Cumulative since baseline 2014
³ In 2019
⁴ On smallholder reference farms compared to baseline 2014
⁵ Cumulative since baseline 2014. Includes smallholders reached through training reported under "Empower smallholders"
⁶ In 2019

The Good Growth Plan New 2025 Commitments & Targets

Accelerate innovation for farmers and nature	Strive for carbon neutral agriculture
Invest \$2bn in sustainable agriculture breakthroughs 2 new sustainable technology breakthroughs per year Strive for the lowest residues in crops and the environment	Measure and enable carbon capture and mitigation in agriculture Enhance biodiversity and soil health on 3 m ha of rural land every year Reduce the carbon intensity of our operations by 50% by 2030 ¹
\$2bn	3m
Help people stay safe and healthy	Partnering for impact
8m	
Goal zero incidents in our operations Train 8m farm workers on safe use every year Strive for fair labor across our entire supply chain	Build cohesive partnerships and publish their sustainability objectives Launch innovation dialogues for inclusive consultation on sustainability Board level governance of sustainability

¹ Currently Syngenta Crop Protection and Syngenta Seeds only.

MAP Story of the Year

Every Person Could be a Hero

Supporting Rural Areas to Fight the Covid-9 Pandemic

During February and March of 2020, when the pandemic raged in China, MAP donated RMB1.2 million, 80,543 liters of disinfectants and 45 tons of epidemic control supplies to frontline medical teams, provided free disinfection services to 907 villages in 16 provinces, in 5.84 million square meters. MAP also purchased 600,000 tons of corn from farmers, sold and delivered 200,000 tons of rice to processing enterprises, facilitated the sale of 219.5 tons of apples, oranges, strawberries and other produces. Through MAP service centers and MAP rural service stations across the country, MAP provided services for 308,000 hectares of farmland during the spring growing season in a timely manner.



The MAP rural disinfection program featured on nationwide TV news



MAP supporting disinfect efforts in rural areas



MAP employees helping disinfect villages



MAP
中化现代农业技术服务中心

Wei Yunsong: Right Here, We Are

During 2020 spring, all MAPPERS fulfilled their commitment and stuck on their posts to serve clients. Numerous ordinary moments, from numerous MAPPERS became an extraordinary ensemble of great perseverance during the pandemic.

Wei Yunsong is a member of the Hubei MAP team. On January 22, Wei arrived at the Xiantao Depot to work his shift. As the pandemic triggered strict lockdowns within Hubei province, he was left stranded with no replacement. Wei stayed at his post for 60 days, including Chinese New Year, living on rice stored in the depot and vegetables grown in the small courtyard. When customers called MAP for help, Wei and his coworkers quickly responded. When the truck was stopped at the checkpoints, they carried the goods on their back and made the urgent delivery on foot.

Wei Yunsong, member of the Hubei MAP team

MAP

Green Development

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The Helan MAP Service Center



Alfalfa harvesting at the Aluhorqin Banner MAP Service Center

Vision and Mission

Vision

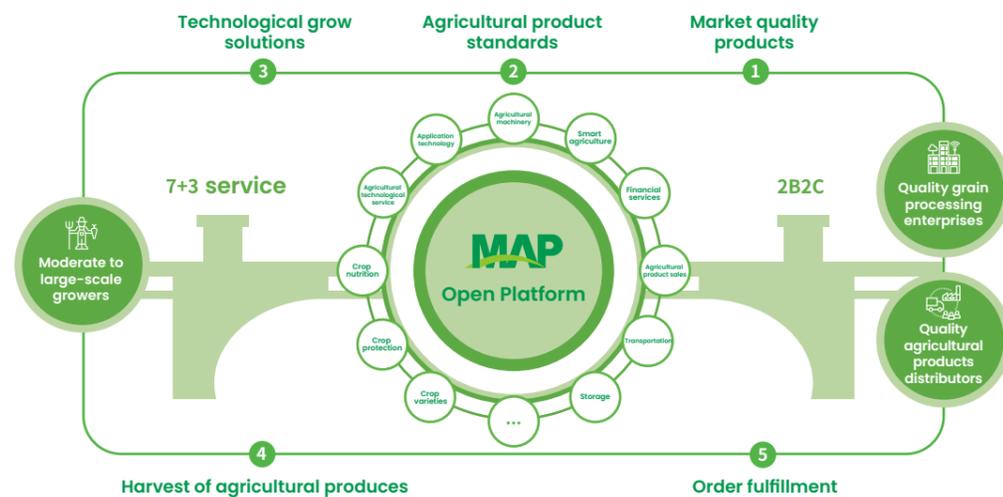
To become the most innovative and globalized agricultural technology company in China

Mission

To benefit more farmers and consumers with modern agriculture

Business Positioning and Value Proposition of MAP

MAP takes "to earn the trust from field to fork" as its value proposition, and is committed to becoming a leading "organizing and service platform of whole agricultural industrial chain" in China.



As of December 31, 2020, MAP has built **329** MAP service centers and **900+** high-standard MAP farms in **469** counties, **28** provinces, serving **775,000** hectares of farmland

2017

- 04 Officially launched the MAP strategy
- 09 Launched the first financial product, "agricultural loan"
- 11 Established the first MAP center

2018

- 03 Launched the Panda Guide
- 04 Launched the "MAP Zhinong" APP
- 07 Specified the goal of MAP, which is "growing quality produce" for consumers, and help farmers "get better prices"
- 09 Launched the "MAP Huinong" APP
- 10 Established three service teams focusing on grains, cash crops, and specialty crops respectively

2019

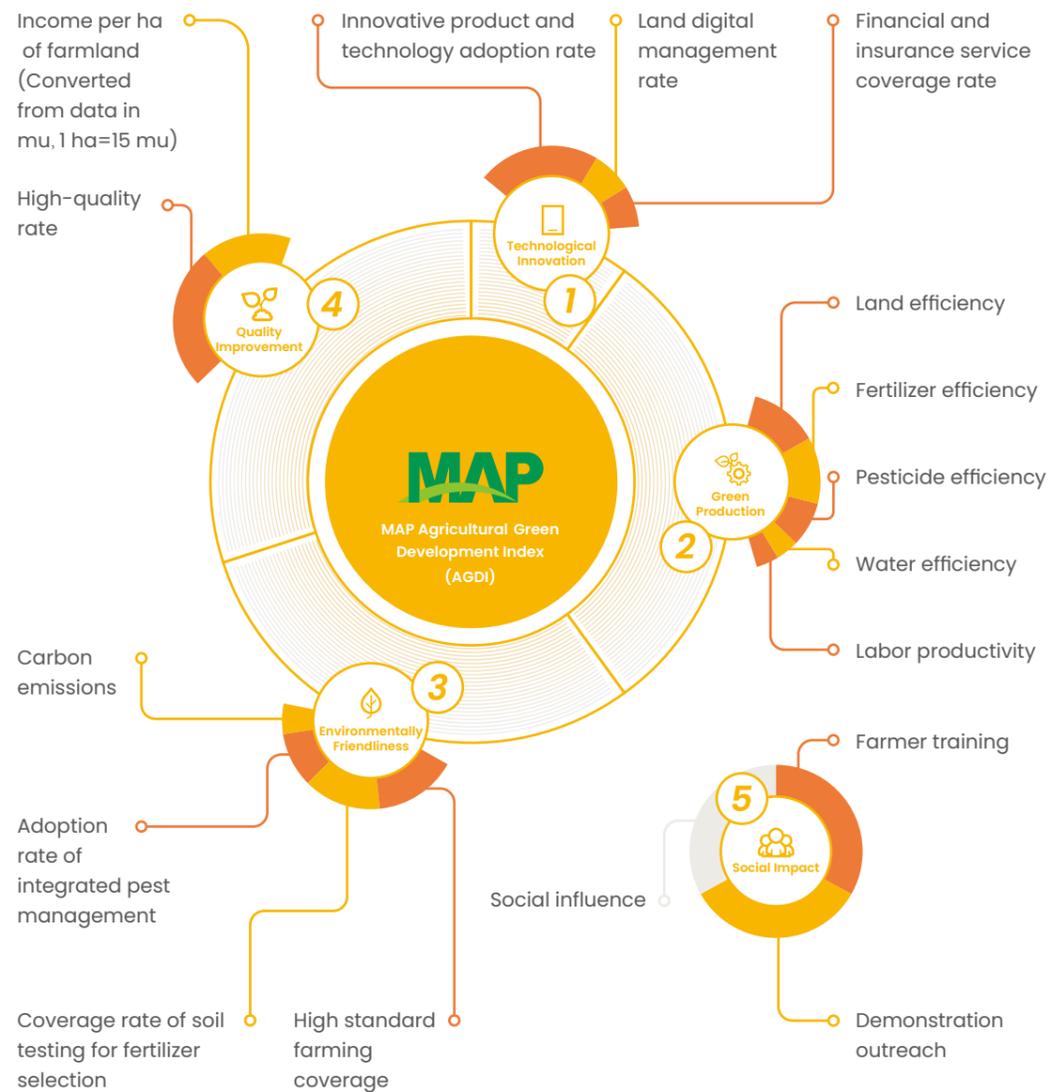
- 03 Sinochem Group and the Ministry of Agriculture and Rural Affairs signed *The Implementation Plan to Support Quality Improvement of Farmer Cooperatives*

2020

- 03 Launched the "MAP beside" quality control traceability system
- 07 Launched the first big data yield insurance in China
- 11 The Central Agricultural Broadcasting and Television School and Syngenta Group China signed a strategic cooperation framework agreement to jointly build a high-quality farmer training platform
- 12 Sinochem Modern Agriculture Co., Ltd. became a national key leading enterprise in agricultural industrialization
- 12 The MAP Industry Poverty Alleviation Model was selected as one of the "Top 50 National Enterprise Targeted Poverty Alleviation Cases in 2020" by Poverty Alleviation Office of the State Council

MAP Agricultural Green Development Index

In order to promote the scientific and effective development of MAP, we have developed the MAP Agricultural Green Development Index (AGDI) based on the core principles of sustainable agriculture in cooperation with China Agricultural Green Development Research Center. Ensuring a balance between sustainability and development, the indicators are selected in accordance with the principles of materiality, systematic, independence and applicability, experts from China Agricultural Green Development Research Center studied existing data and organized consultation sessions with industry experts to finalize these indicators, which consist of five primary indicators and 17 secondary indicators. The five primary indicators, with a total score of 100 points, are technological innovation, green production, environmentally friendliness, quality improvement, weighting at 10%, 30%, 30% and 30% respectively, and social impact, which is a qualitative indicator.



From July to September 2020, the research team organized by China Agricultural Green Development Research Center went to five agricultural areas to conducted in-person interviews with farmers. The five areas were selected to represent different agricultural production models, including Ningjiang(rice) in Jilin, Qihe (wheat/corn rotation) in Shandong, Jingtai(corn) in Ningxia, Zhenglanqi(potato) in Inner Mongolia, and Dawei(grape) in Anhui. The research team visited 80 villages in 30 townships, and interviewed a total of 485 farmers, including both MAP farmers and non-MAP farmers. The surveys returned 467 valid questionnaires, including 145 questionnaires from MAP farmers and 322 questionnaires from non-MAP farmers, which is statistically significant with an effective rate of 96.3%.

The survey results show that the AGDI value of MAP farmers is 46.65, which is 33.79% higher than that of non-MAP farmers.

Indicator*	MAP farmers	Non-MAP farmers	Local average
Agricultural Green Development Index	45.65	34.12	40.76
Technological innovation	58.61	36.03	50.16
Green production	39.99	36.57	38.34
Environmentally friendliness	44.39	29.53	38.21
Quality improvement	48.23	35.66	42.60
Social impact**	-	-	-

45.65
AGDI of MAP farmers

34.12
AGDI of non-MAP farmers

Note:

* The AGDI value is calculated with the comprehensive index methodology, and each indicator is standardized using the entropy methodology;

**Social impact is used as a qualitative indicator for evaluating coverage and impact of MAP.



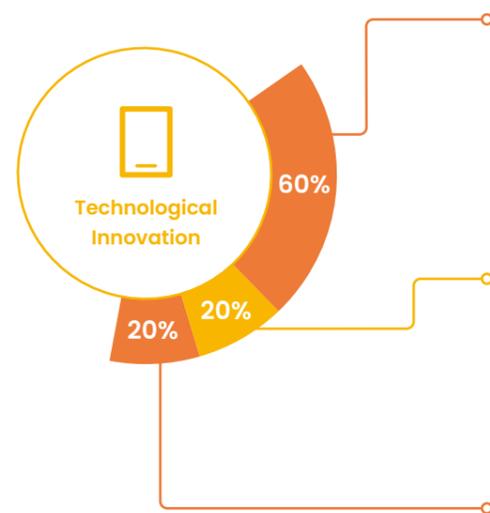
Powering Development with Technological Innovation



MAP has established 418 research platforms for variety selection and supporting technologies, provides farmers with innovative varieties and planting solutions that “have better quality, generate more income, and are easier to grow and more sustainable”, helping promote

unconventional growing patterns as well as digitalized crop management. MAP also provides financing and insurance to help farmers expand their operations and manage risks.

Indicators



Innovative product and technology adoption rate

Ratio of the area of farmland with innovative varieties or technologies applied, including high-quality new varieties, precision seeding, drone application, IPM, deep side fertilization, precision fertilization, water and fertilizer integration, etc., to the total area of farmland

Land digital management rate

Ratio of the area of farmland covered with crop management technologies applied, such as crop growth monitoring, early warning of diseases and pests, and precise weather disaster forecast, to the total area of farmland

Financial and insurance service coverage rate

Ratio of the area of farmland covered by financial and insurance services (weighted at 70% and 30% respectively) to the total area of farmland

Survey Findings

The average value of the technological innovation primary indicator of MAP farmers surveyed is 58.61, which is 62.67% higher than that of non-MAP farmers surveyed. MAP has played a significant role in promoting farmers

to adopt more innovative varieties and technologies, and pay greater attention to digital management, financial and insurance services.

Innovative product and technology adoption rate		Land digital management rate		Financial and insurance service coverage rate	
Non-MAP farmers	44.33	Non-MAP farmers	4.65	Non-MAP farmers	42.50
MAP farmers	64.31	MAP farmers	44.62	MAP farmers	55.52
Local average	55.91	Local average	30.39	Local average	52.67

“
The first time I started working with MAP with 200 mu of farmland in 2019 and got a bumper harvest. In 2020, the cooperation increased to 1,000 mu (1ha=15mu), and will increase to 1,500 mu, which is all the land in my farm, in the next year. I trust MAP, totally!
 ”
 Corn Grower Wu Zhanying, Gulang County, Gansu Province

Digitalization Makes Precision

Wu Zhanying is a large corn grower in Haizitan Township of Gulang County, Gansu Province. Before becoming a MAP client, he has never heard about words such as “light and heat resources” or “accumulated temperature”. Instead, he just simply believed that the longer the growth period, and the larger each single ear of corn grew, the higher the yield would be.

2019 spring, Wu Zhanying learned how to use the “MAP Zhinong” APP to record the accumulated temperature data of the fields in his farm. Later he selected a new corn variety recommended by the APP based on big data and local conditions. The new crop has strong seedlings and resists diseases that often pester local farmers. With the yield of his farm increased by approximately 750 to 2,250 kilograms per ha, Wu Zhanying became a total believer of modern agricultural technology.



Seeing is Believing

The Overseas Chinese Farm in Ningjiang District, Songyuan City has been growing rice for decades. “Showing by doing.” MAP agronomists carried out a pilot project of deep-side fertilization technology, to give local farmers a first-hand opportunity to witness the effectiveness of this modern agricultural technology.

The pilot project produced clear success: less fertilizer and labor used, and better quality, which generated more income. The results were more than enough to persuade local farmers, all experienced rice growers, to sign-up with the local MAP service center, ordering deep-side fertilization service and the specialty fertilizer for the next growing season, as well as the full-process technical support service of MAP.



A MAP client in his rice field.

Pilot Project Results

Pilot Plots	Control Plots
66-70% Quality Rice Ratio (%)	62% Quality Rice Ratio (%)
3.04 Price (RMB/kg)	2.86 Price (RMB/kg)
8,921 Unit Yield (kg/ha)	9,167 Unit Yield (kg/ha)
27,118 Unit Income (RMB/ha)	26,217 Unit Income (RMB/ha)

Boosting Efficiency with Green Production

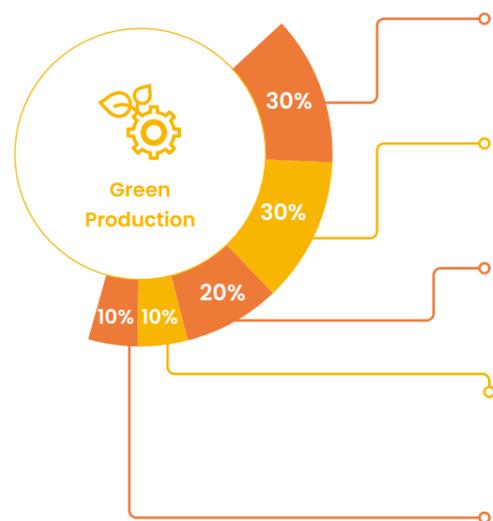


Green agricultural production refers to the practice of using management and technology to control pollution along the entire agricultural production process, aiming at conserving energy, and reducing resource consumption and pollution. It is a response to the trend of green consumption by creating more green products with the minimal environmental costs.

MAP establishes service centers across China to help improve green agricultural production.

Focusing on the main grain production areas and key agricultural production protection areas, MAP has developed a two-tier service platform, with MAP service centers at the county level, and MAP demonstration farms and MAP village service stations at the village level, providing farmers with on-site agronomist support, and customized fertilization, irrigation, crop protection solutions based on soil or leaf testing results.

Indicators



Land efficiency

Income per ha of farmland
(Converted from data in mu, 1 ha=15 mu)

Fertilizer efficiency

Total yield / total amount of fertilizer applied
(kg/kg)

Pesticide efficiency

Total yield / total amount of pesticide applied
(kg/ml)

Water efficiency

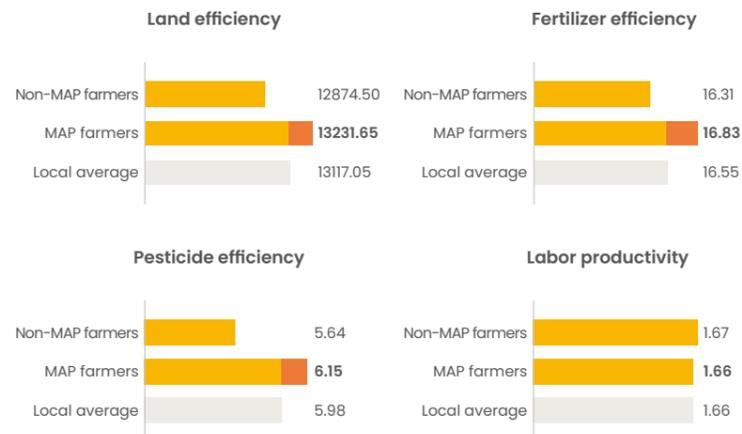
Total yield / total amount of water used
(kg/ton)

Labor productivity

Total yield / total cost of labor
(kg/yuan)

Survey Findings

The average value of the green production primary indicator of MAP farmers surveyed is 39.99, which is 9.35% higher than that of non-MAP farmers surveyed, showing an obvious advantage. For the water resources use efficiency secondary indicator, the 2020 survey only produced baseline data for future reference.



“

I first learned about Sinochem Agriculture through the introduction of the local Bureau of Agriculture in 2019. Because of its strong brand name and good service model, I took the initiative to organize farmer cooperative in my village to cooperate with MAP. I also facilitated the cooperation between MAP and several nearby villages. In over two years, MAP is not only a great helper at farming, but also help enable us to get better price for the corn we grew. MAP not only helped to make farmer at ease, but also helped us get good price for our crop. I trust MAP, and we will further expand our cooperation with MAP in the coming wheat season!

Gao Chenglu, Hexigao Village Commission Secretary

”

MAP, is a Map of Technology, and a Map to Prosperity

In July 2019, after the Shanghe MAP Service Center was established, the MAP team conducted extensive interviews in nearby villages to understand the challenges and needs in local agricultural production.

Focusing on these priorities, MAP team selected over a dozen large growers and villages as pilots. MAP agronomists visited each plot of farm to collect soil samples for testing, and developed customized solutions based on the testing results.

In the 2019 wheat growing season, Shanghe MAP Service Center provided Cruiser Plus seed coating services, formula fertilizers, and multi-protection spraying at later stages to help the farmers prevent wheat disease. As the result, the infestation rate of stalk rot for the growing season went down significantly from 35% to about 5%. Wheat yield also increased significantly to 9,735 kilograms per ha of land from the 8,250 kilograms in previous years.

In early 2020, Gao Chenglong officially contracted with MAP to become a village service station under the Shanghe MAP Service Center. In this year's corn growing season, his success attracted an increasing number of local farmers to sign-up and become MAP clients. All of them got a bumper harvest by adopting the variety and base fertilizer recommended by MAP, with the corn yield per ha had increased from 9,000 kilograms in previous years to 10,500 kilograms. Some farmers even harvested 12,000 kilograms of corn per mu of land, becoming the envy of their villages.



MAP soil sampling vehicle

Developing Environmentally Friendly Agriculture

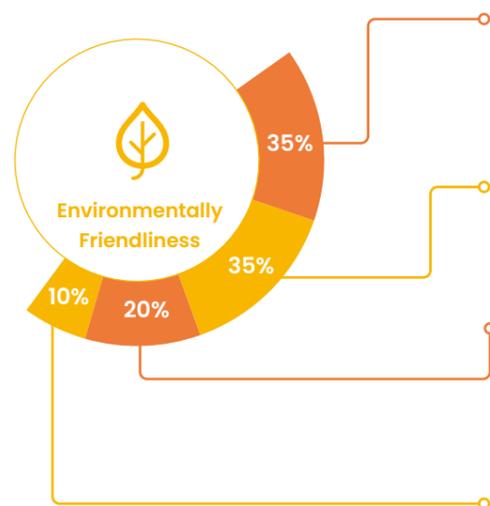


Environmentally friendliness in agriculture refers to a clean agricultural production system centered on circular agriculture. Developing environmentally friendly agriculture is an important part of achieving sustainable agricultural development.

MAP mainly uses high-standard farming, soil testing for fertilization selection, organic

fertilizer, comprehensive pest control and other measures to effectively mitigate the impact of agricultural production to soil, adjust the physical and chemical structure of soil, reduce environmental residues and pollution caused by excessive pesticide use, and strive to achieve better resistance management.

Indicators



High-standard farming coverage

Percentage of area of land cultivated with high-standard farming technology in the total planting area (%)

Coverage rate of soil testing for fertilizer selection

Percentage of area of land with soil testing conducted in the total planting area. (%)

Adoption rate of integrated pest management

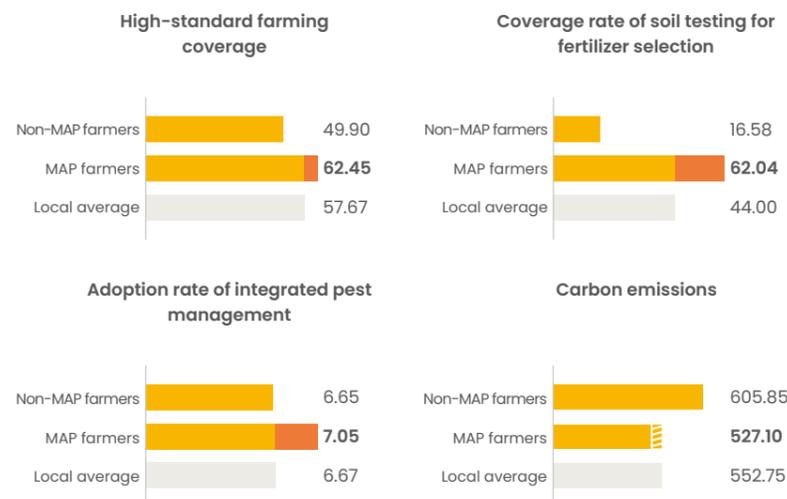
Percentage of area of land with integrated pest management technology applied in the total planting area. (%)

Carbon emissions

N₂O emissions, calculated using the IPCC method (kg CO₂e/ha, converted from data in mu, 1 ha=15 mu)

Survey Findings

The average value of the environmentally friendliness primary indicator of MAP farmers surveyed is 44.39, which is 50.32% higher than that of non-MAP farmers surveyed. The difference is particularly significant regarding soil testing for fertilization selection.



To Protect the Black Soil Like We Protect the Panda

“ It is necessary to summarize and promote the Lishu Model, and take effective measures to protect and use the black soil, the ‘giant panda’ in arable land, so that it will continuously benefit the people.

In July 2020,

Xi Jinping made new requirements for black soil protection during his inspection in Jilin

”

The Lishu Model refers to a farming practice developed in Lishu County of Jilin Province that combines returning corn stalk to the farmland for mulching purposes, minimizing the number of tillages, and full-process mechanized cultivation, including harvesting and stalk mulching, soil loosening, no-tillage sowing and fertilization, and disease, insect, and weed control.

MAP reached cooperation with the Lishu County Government and the Agriculture and Rural Bureau of Siping City, Jilin Province, to provide a complete range of MAP services for the Lishu County Black Soil Alliance and more than 20 key cooperatives in Lishu County. Leveraging its 7+3 service advantages, MAP provides its clients, including cooperatives, family farms and large growers, with a variety of services and supports, including high-quality grain contract farming, agricultural technology support, green crop protection, prevention and control, and soil improvement plans. MAP also uses its smart agricultural management tools to provide cooperatives and other agricultural entities with full process growing data support, and supports crop production and contributes to protecting the black soil with technology.

The professional services of MAP were highly recognized by both the government and local farmers, and MAP was invited to share its experience on the “2020 Summit Forum on Black Soil Use and Conservation in Northeast China and the Sixth Lishu Black Soil Forum” in November, 2020.



Zhang Xiaoqiang of MAP sharing the MAP experience on the Black Soil Forum

Promoting Agricultural Upgrade with Quality Improvement



Quality improvement refers to helping farmers improve the quality of produce and increase their income with green agricultural production management measures. Quality improvement is the main manifestation of the high-quality development of agriculture, as well as an important way to ensure sustainable income growth for farmers and meet the demand of consumers.

With the rapid development of industrial organizations, the food value chain is becoming increasingly diversified. MAP takes the contract farming model as an effective

way to help farmers internalize their production costs and avoid potential risks. MAP plays the role of an organizer and a platform of quality agricultural services and actively promote contract farming, helping bring the attention of upstream and downstream value chain players to quality factors such as nutrition and flavor. On one hand, MAP helps processing and distribution enterprises secure stable supply of high-quality ingredients; on the other hand, MAP helps farmers sell their produces at higher prices because of the better quality.

Indicators



Income per ha of farmland

Unit income from crop (RMB/ha), calculated with the weighted average method, converted from data in mu, 1 ha=15 mu)

$$\text{Weight} = A_i / \sum_i A_i$$

(A represents the national planting area of crop, with data from China's agricultural statistics.)

High-quality rate

Output value of high-quality produce / Total output value of produce (%)

("high-quality produce" refer to produce that are above the national standard grade 2 or above, or produce of contract farming.)

Survey Findings

The average value of the quality improvement primary indicator of MAP clients is 48.23, which is 35.25% higher than that of non-MAP clients, indicating value of the MAP service model.

Income per mu of farmland (RMB/ha)		High-quality rate (%)	
Non-MAP farmers	30052.50	Non-MAP farmers	11.44
MAP farmers	32491.50	MAP farmers	35.01
Local average	32001.45	Local average	24.22



1.1 million boxes(5kg/box) of orange grown

400 hectares of orchard serviced by MAP smart agriculture



14 MAP centers contracted

13,000+ hectares of rice field under management

20% of Yihai Kerry's total contract farming orders for rice

MAP Smart Agriculture Supports the Chu's Orange

In November 2019, MAP signed a strategic cooperation agreement with Yunnan Chu's Agriculture to provide precision agricultural services to help manage the quality of Chu's Orange through the "MAP Huinong" APP.

In December 2020, 1.1 million boxes of "Yunguan Orange", another new variety of the Chu's Orange after the "Rock Candy Orange", with the "MAP beside" quality control traceability label reached the Hema Market in Kunming and immediately became a hot sale.

From the initial 40 hectares to over 2,600 hectares today, Chu's Orange planting bases have spread all over Yunnan. With the continuous expansion of planting scale, traditional farm management methods can no longer meet the development needs. MAP provides a variety of fine management services such as precision weather forecasting, early warning of plant diseases and pests, plant nutrition, and soil improvement based on the soil conditions and orange varieties. MAP's services helped Chu's Orange achieve higher efficiency and reduce management costs, and contributing to the outstanding quality of Chu's Orange.



Bringing the Xiaozhan Rice back to Market

Xiaozhan Rice is a valued rice variety grown in Tianjin. It has the first certified regional trademark for grain products in China. However, with the urbanization of its area of production and the changes in natural environment, the production of Xiaozhan Rice gradually declined.

In 2018, MAP established a service center in Wangwenzhuang Township, Xiqing District, and worked together with the local government and farmers to provide comprehensive production support for over 1,300 hectares Xiaozhan Rice with the green ecological growing model, traceability and quality assurance signified by the "MAP beside" label. In August 2020, the new harvest of this premium rice reached consumers under the brand name "Hundred-Year Jinggu".

Yihai Kerry and MAP developed a partnership on high-quality specialty rice products. Yihai Kerry handles the processing, branding and marketing of rice products and places orders, while MAP takes the role of organizer and service provider, providing high-quality grain varieties by leveraging its R&D advantages and focusing on local specialty varieties, as well as the full package of MAP farming solutions.



Generating Positive Social Impact to Ensure Bumper Harvests

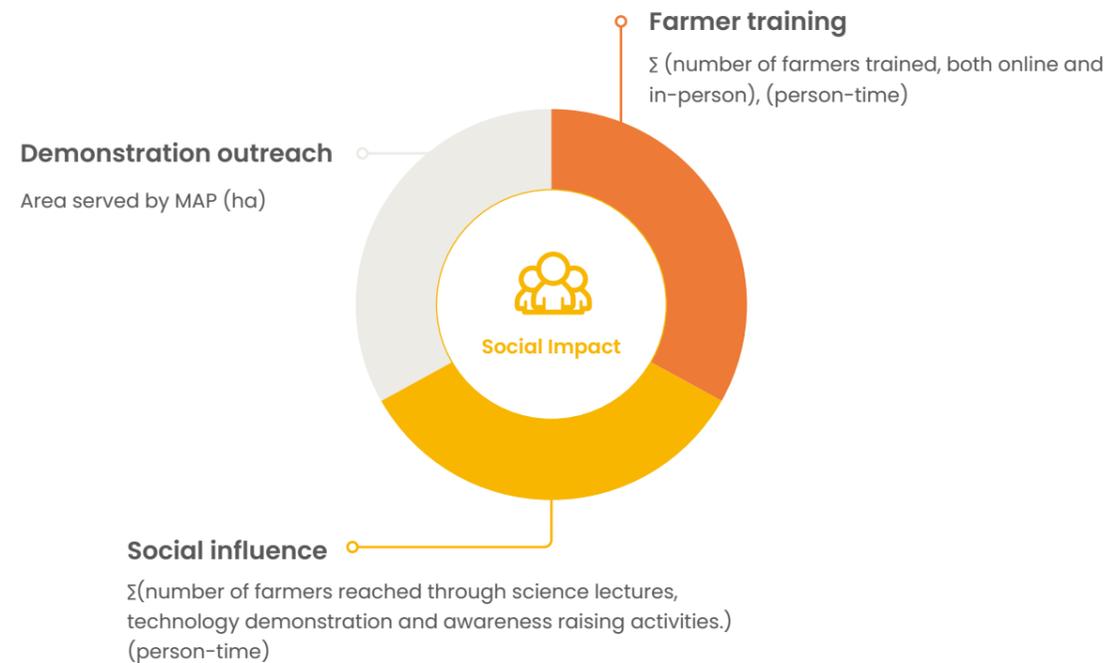


The social impact primary indicator underscores MAP's influence upon local communities and among farmers through the extensive awareness raising activities of MAP service centers, such as online and in-person training, agronomic training, demonstration, and news release, etc.

MAP service centers across China regularly carry out different trainings, awareness raising and demonstration activities that are

customized to local needs and crop conditions, aiming at creating social impact and attract more farmers and businesses, thereby driving more Chinese farmers to embrace modern agricultural technology and benefit from sustainable development. MAP's contribution to society is also widely recognized by different stakeholder groups, particularly the Chinese government.

Indicators



Survey Findings

The MAP service centers, with their 7+3 service model, has been playing an important role in helping farmers increase their yields through

farmer training, technology demonstration, and awareness raising activities.

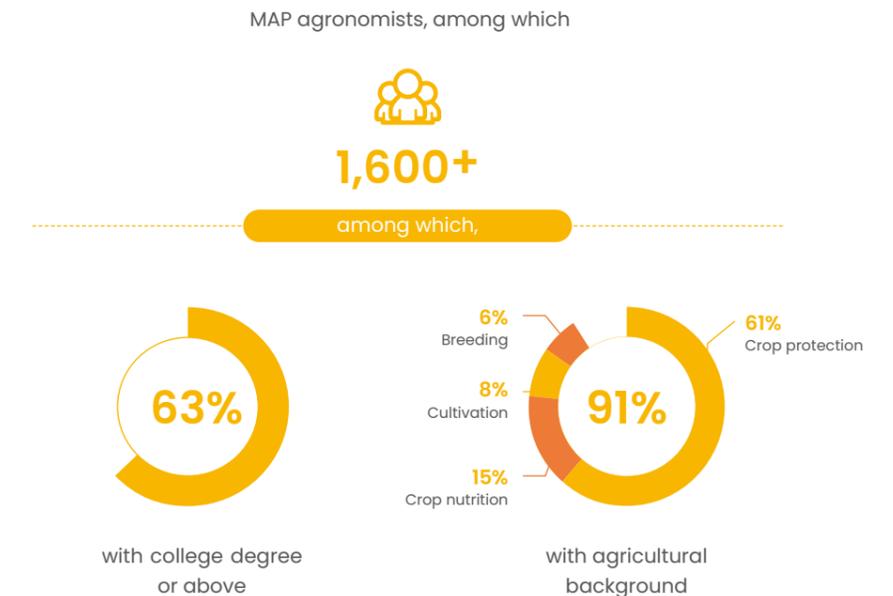
15%+
Average comprehensive income

240m kg
Accumulated increase in grain production

RMB 15.6+ bn
Accumulated income growth

Establishing a Team of Agronomists with both Expertise and Dedication

MAP has developed a team of over 1,600 agronomists with expertise in various fields in 28 provinces and service areas, and built a sound technical training system to help with the capacity building of the agronomists.



Cultivating a New Generation of Tech-Savvy and Business Savvy Farmers

Cultivating high-quality farmers through training is an important task for MAP to serve new agricultural business entities in China. Extensive farmer training has been an important form of technology promotion and business promotion of MAP, and an indispensable part of the MAP service model.

677 farmer training classrooms and demonstration bases built

2,000+ farmer training sessions carried out

160,000 farmers benefited

40,000+ farmer households reached



The “National Team” for Serving China’s Agriculture and Rural Areas

To date, MAP service centers have helped with the harvest of 5 billion kilograms of grain across the country, playing an increasingly important role in ensuring food security and helping farmers increase their income.

MAP’s role in guiding and cultivating the high-quality development of new agricultural entities and effectively promoting the adoption of modern agriculture among farmers is fully recognized by governments at all levels. The Ministry of Agriculture and Rural Affairs, National Food and Reserve Administration designated Sinochem Group as a strategic partner in various national programs such as government procurement of grains, support the development of farmer cooperatives, promote growing high-quality produce and support farmer training activities.

In March 2019, the Ministry of Agriculture and Rural Affairs and Sinochem Group signed The Implementation Plan for the Joint Promotion of the Quality of Farmer Cooperatives by Sinochem Corporation, the General Office of the Ministry of Agriculture and Rural Affairs. In August 2020, the Ministry of Agriculture and Rural Affairs and Sinochem Group cohosted a special experience sharing seminar on how the Company supported the high-quality development of farmer cooperatives at the Dalat Banner MAP Service Center in Inner Mongolia .



In November 2020, the Central Agricultural Broadcasting and Television School and Syngenta Group China signed a strategic cooperation framework agreement to jointly build a training platform to cultivate high-quality farmers. The two parties plan to use their respective advantages in the next five years through public-private partnership, to jointly promote the high-quality development of new agricultural business entities and service entities, and jointly cultivate high-quality farmers who meet the needs of rural revitalization and modern agricultural development.



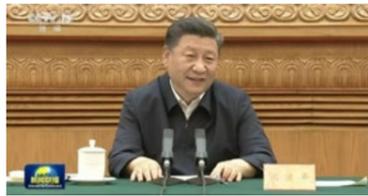
Government Recognitions

- 2020.6.7**

In June and July 2020, President Xi Jinping visited the farmers who were MAP clients during his visits in Ningxia and Jilin, and stressed on the importance of supporting farmers’ grain production with the best technology, and exploring and supporting the development of rural cooperatives.


- 2020.7**

In July 2020, Ning Gaoning, Chairman of Sinochem Group participated in a forum for entrepreneurs chaired by President Xi Jinping, and reported the latest progresses and achievements effectiveness of the MAP model to President Xi Jinping.


- 2020.9**

In September 2020, Hu Chunhua, Vice Premier of the State Council, hosted a symposium of large leading agricultural enterprise in Harbin, Heilongjiang. Sinochem Group made a presentation on how the Company integrates the global resources of Syngenta Group and takes measures to promote rural development focusing on the MAP model.



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The key to agricultural modernization lies in the modernization of technology. It is necessary to strengthen the integration of agriculture and technology, strengthen the cooperation between agricultural bases and research institutions. Experts and scholars must write their theses in the field, to help farmers master advanced agricultural technology so that they can grow the best grains with the best technology.

Xi Jinping emphasized on agricultural technology during his inspection in Jilin in July 2020

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Corn field near harvest



Expert Quotes



Right now, China's agricultural and rural areas are in a critical period of transformation and upgrading to achieve high-quality development. Promoting green agricultural development is a profound revolution in the concept of agricultural development. Focusing on the core elements of agricultural green development such as efficient and sustainable use of agricultural resources, reduced use of agricultural inputs, digital management of agricultural production, managed agricultural production services, agricultural ecological and environmental protection and management, Syngenta Group studied the production of rice, wheat, corn, potato, grape and other grains and high-value-added cash crops in China with regards to the factors of "technological innovation, green production, environmentally friendliness, quality improvement, and social impact" to gain better understanding of the innovativeness, sustainability potentials and social impacts of the MAP service model. With the advanced service concept, technology leadership and human capital that demonstrated by the first-hand survey data collected from the field, MAP will play a leading role in the development of China's agrochemical industry, promote the green agricultural development, and create long-term impact and social value in China.

Yang Peng

Director, Institute of Agricultural Resources and Agricultural Regional Planning, Chinese Academy of Agricultural Sciences

Secretary General, China Agricultural Green Development Research Society

China Agricultural Green Development Research Society is a national-level social academic society focusing on green development. It conducts research on agricultural green development theories, technologies, evaluation indicators and methods, as well as the planning, consulting and third-party evaluation of key technologies, major projects, and scientific research projects related to agricultural green development.

About this Report

Reporting Period

All data in this report is as of December 31, 2020 unless otherwise noted.

References:

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4. Qi Cheng, Research on the Establishment and Application of China's Modern Agricultural Evaluation Indicator System, [J] Issues in Agricultural Economics, 2009, (3) 13-20.
5. Sinochem, Sinochem Sustainability Report 2019.
6. Technical Guidelines for Green Agricultural Development (2018-2030), issued by the Ministry of Agriculture and Rural Affairs.
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Methodology

Weight Determination

The weights of the MAP Agricultural Green Development Index (AGDI) are determined by expert scoring method following the Delphi methodology. Experts in the agricultural field are selected to determine the weights independently, and the weights for the indicator are calculated based on their input statistically. vv

Calculation

The MAP Agricultural Green Development Index are calculated with the composite index method. The primary indicators of AGDI are calculated with the following formula:

$$AGDI_k = (\sum_r \sum_j S_{j,r} W_{j,r}) / 5$$

in which, $ASDL_k$ refers to the level of green development on the particular primary indicator, with a value range of [0,100], which is composed of an indicator for region (r) and the secondary indicators (j) under the particular primary indicator. $S_{j,r}$ refers to the standardized value of a secondary indicator, with a value range of [0,100] and $W_{j,r}$ as its weight, and it is standardized with the entropy method.

Standardization formula
$$S_{j,r} = \frac{S_0 - S_{min}}{S_{max} - S_{min}} \times 100$$

in which, S_0 is the original value of $S_{j,r}$, S_{min} and S_{max} are the minimum value and maximum value of $S_{j,r}$.

The MAP AGDI is calculated by the weighted summation of the sustainable development levels of 5 primary indicators:

$$AGDI = \sum_k ASDL_k w_i$$

in which, w_i is the weight of the primary indicator.

NPK Scalar Calculation

For compound fertilizers, the scalar quantities are calculated directly according to the content of the effective NPK components. The scalar quantities of other fertilizers are shown in the table to the right (Data from Reference 4):

Fertilizer	N	P	K
Urea	46%	-	-
Potassium sulfate	-	-	50%
Superphosphate	-	12%	-
Diammonium phosphate	18%	-	48%
Ammonium bicarbonate	17%	-	-

Sources of Research Data

The results of the survey data in this report are provided by China Agricultural Green Development Research Center.

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