

Geek Farmer

Annual Special Edition

44

2020/05/25

Build the infrastructure of agriculture for the next 100 years.



Smart Agriculture

Solving Chinese Issues Boosting Global Growth

ADVANCING AGRICULTURE



12 | MILESTONE

From Zambia to China: Drones Unleashed to Defend Crops Against Fall Armyworm

Without well-validated natural enemy or genetically modified maize, local farmers in Africa and Asia mostly resort to traditional pesticide spraying but, in some cases, find the effect disappointing. Having developed new technology to replace the old fashioned, XAG starts actively engaging in the fight against fall armyworm in some of most affected areas, such as Zambia and China.

30 | COVER STORY

Smart Agriculture | Solving Chinese Issues, Boosting Global Growth

The Sino-U.S. trade friction has been a highlight of discussions in the past two years. Besides the comparison of high-tech industries between the two countries, the gap in their agriculture sectors has become a topic of wide concern as well.



Contents

02 VISION

MILESTONE

- 08 New Solutions for Global Seeding Problems
- 16 Shaping the Future of Food and Agriculture in Australia
- 22 Korean Drone Enthusiast's New Adventure
- 24 A Story of XAG and Airbus
- 26 Stepping into the Global Arena
- 28 XAG Wins Top Honour

FEATURE

- 38 Initiate Ground Air Disinfection in COVID-19 Battle
- 42 Growing with Plant Protection for a Decade
- 46 Meet the Female Drone Pilot in Agriculture
- 46 Bayer and XAG Deepening Corporations in Japan
- 50 Business Development in Latin America

PROJECT X

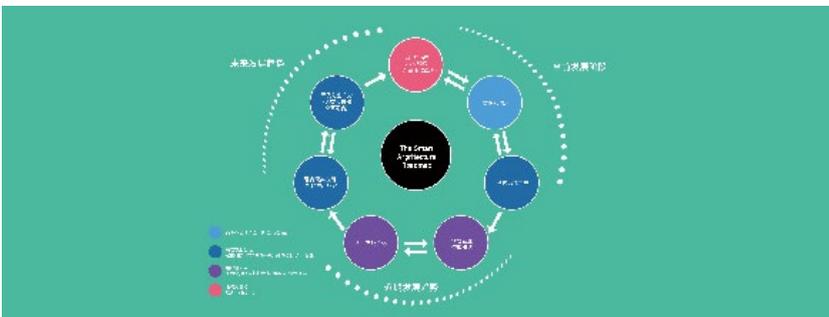
- 68 The Birth of XAG Agricultural Utility Vehicle
- 72 Embracing Change and Welcoming a Brighter Future

64 EVENTS

60 | PROSPECTS

The Smart Agriculture Roadmap: Heralding the Era of Agriculture 4.0

5G revolution, robotic labour, technology cross-border, disintermediated supply chain and increasing demand for transparency, are five important emerging trends that set to radically reshape the future of agriculture.



PRESENTED BY BIN PENG
EDITOR IN CHIEF JUSTIN GONG
LEAD EDITOR ANNE XU
EDITORS OLIVIA ZHOU
KIM QIN
CASSY HO
HOBO YAO
NEAL JIA
CASSIE MA
XINSHUAI HUANG

DESIGNER ZOE LIANG
TEETWO TIAN
MINYI LIAO
MENGYAO LI
HUABIN LIU

PHOTOGRAPHER SHUAI ZHAO
MAOFA LIN
JACKY SHU
YUKUN ZHAO

ISSUED BY XAG CO., LTD.
PUBLISHER XINQIAOYOU PRINTING
ISSUE DATE 2020/5/25
CONTACT jtt@xa.com





**A dream you dream alone is only a dream.
A dream you dream together is reality.**

—— *John Lennon*

Six years ago, prepared to make a difference, we knocked on the door of smart agriculture with drones. Today, XAG products and services have a presence in 6 million small farming households across 42 countries. From the wineries in South Australia and the Northern Wilderness in Heilongjiang, to the orchards in California and the cotton fields in Aksu of Xinjiang, over 25 million hectares of farmland have embraced intelligent production brought about by our devotion to technology. As of 2019, thanks to the popularity of XAG agricultural drones, 30,000 and more villages in China have enjoyed access to state-of-the-art precision pesticide application technology. Everyday around

the world, farmland covering a total area of 200,000 hectares are offering more assured and standardized services because of XAG. As the company reaches increasing sophistication in both technology and product offerings, the dream that all XAG employees dream together will become reality: to put more food and safer food on people's tables; and make every farmer committed to scientific cultivation to have fair returns and recognition.

Yes, we are driving a great technological change. It is taking place in rural areas, but will ultimately reach each and every human being. ✕

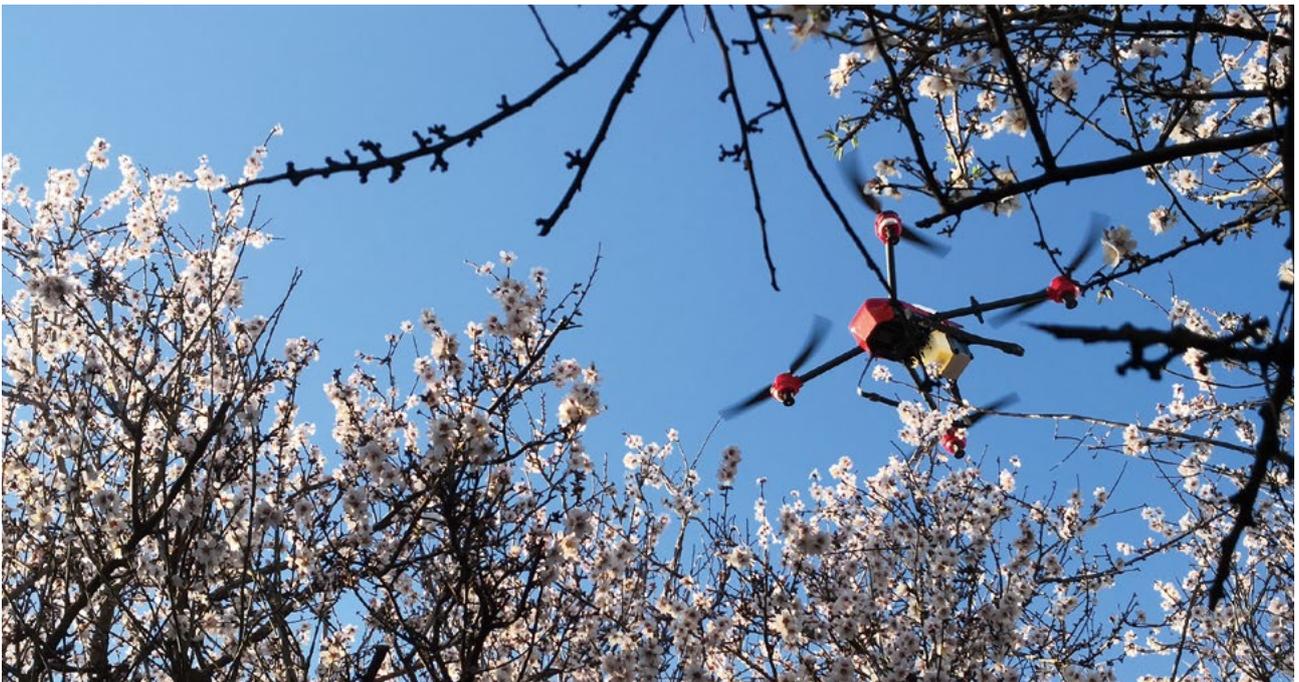
Justin Gong

Jan.2020

Solving Local Problem in A Global Scale



XAG was invited by Bayer to participate in technical discussion on the intelligent production solution of fruit tree with global experts.



Precision application with drone for vineries and orchards in Australia greatly helps protecting bees while increasing pollination for farmers.



To prevent Fusarium wilt and ensuring supply of delicious bananas, farmers in Ecuador deploy XAG agriculture spraying drone as the safeguard.



XAG's Plant Protection UAS is considered key strategic production asset in Zambia, and operator is protected when doing mapping.



Japan is in need of smarter and more efficient agriculture solutions to resolve the aging problem and lack of labor.

Technology is the Great Equaliser



XAG donated a set of smart agriculture system along with scientific production guidance to a small town in Shanxi Province as a way to help carrot production.



Planting a seed of tech will grow, even in barrens.



Shen and Dai are sisters-in-law from Xinjiang, they learned to use spraying drones at their free time and conducted crop protection work.



The JetSeed application accelerated the restoration of grassland ecology, and helped local herders to increase income, achieving both ecological protection and poverty alleviation.



Youth who returned to rural area and started career in agri-tech has become 'hero in the field' among villagers.

Providing the Best Support to Users



The young herder is learning to use advanced agri-tech to help protecting grassland ecology.



Spend 5 mins with the farmers to teach them operating the drone.



XAG's Smart Agriculture Promoter teaching the farmer about agriculture e-learning at XAG Academy online platform.

The Best Driving Force is Users' Expectation



Before shipping out the latest XP 2020, there are multiple inspections to make sure every product that goes out meets the high standard.



XAG Manufacturing Plant finished another patch of drones earlier than expected as they will soon spread across the country for spring operations.



Fist user to receive the XP 2020 drone, plus an XAG-customised mini fridge. So now it's not a problem to have iced coke while operating in the field.



New Solutions for Global Seeding Problems

In April 2019, XAG released its first UAS granule spreading system JetSeed in the Ruorgai Grassland with an altitude of 3,600 meters, and cooperated with Hongyuan County of Sichuan Province to build the first Tibetan operations team. Using XAG's JetSeed, the team planted seeds on an immense area of 10,000 mu, accelerating the ecological restoration of the world's largest high-altitude grassland, and helping local herdsmen to increase their income.



I tread on the grassland, feeling I am clay thoroughly clean. Living in this precious world, man is as happy as plants, with history and future together rolling on.



From Guangzhou to Aba

In the jagged mountains, herds of yaks were roaming on the Ruergai Grassland, 3600 meters above sea level, and nearly everything came back to life. The well-equipped Tibetan herders were sitting next to the UAS. Xie Pinghui, a technician of XAG, was teaching Wangqing Zelang how to use the UAS for seeding operations.

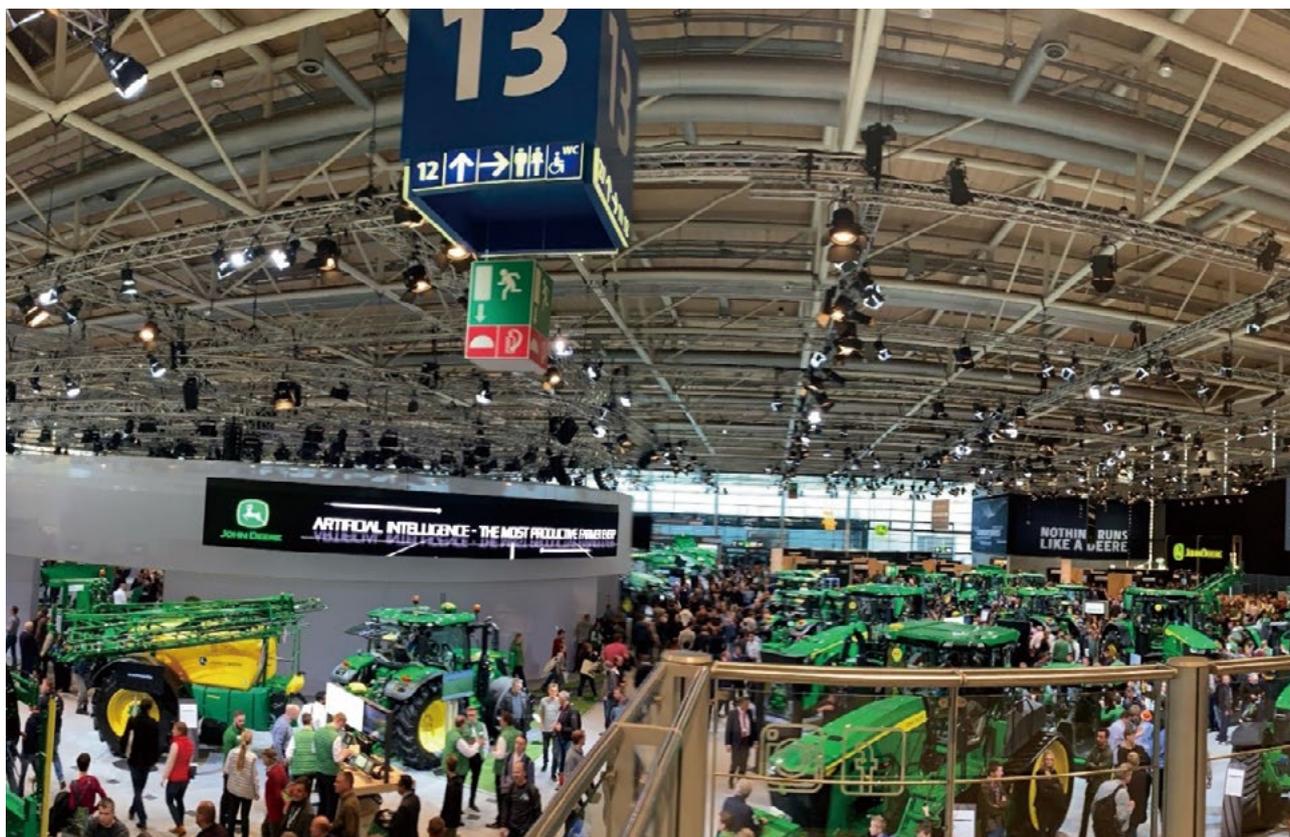
"Due to the serious degradation of grazing land in Aba, Sichuan, we have brought advanced UAS granule spreading technology from Guangdong to work with local herdsmen on the local ecological environment." Xie Pinghui said, "The XAG UAS can be controlled on the mobile phone, and the operation can be enabled by setting up a one-press start. After some instructions, today, they can basically all operate the JetSeed system. Compared with the manual operation, UAS seeding is more accurate, faster and more efficient."

Xie Pinghui said that it used to be a daunting toil for the Tibetans to go to the mountains with big bags of grass seeds and other heavy things on their back. Now, the UAS can fly directly from the bottom to the top of the mountain, and the XAG granule spreading system saves labor and improves efficiency. In the past, daily hand-sowing area was

hardly less than 1Hectare. With the help of the XAG intelligent seeding UAS, they can achieve productivity, and finished seeding on an area of about 43 hectares within a day (8 hours), equivalent to the efficiency of 64 labours.

Wangqing Zelang used to work as a machinery operator at local farms. As early as February this year, he began to learn the UAS flight control technology with three other farm machinery operators, and served as the "UAS operator" in Aba. Today, Tibetan herders operating the UAS are frequently seen in the Northwest Sichuan Plateau. With the further revitalization of the rural economy, more and more "new farmers" will change the situation here.

■ Xie Pinghui teaching Tibetan herders how to use the UAS for seeding operations.





■ The XAG intelligent seeding UAS used for aerial seeding in the grasslands

New Look in the Grassland

In recent years, desertification of the Ruoergai Grassland has aggravated, and the ecological environment has been damaged. XAG uses new UAS technology to improve grassland vegetation, making contributions to the ecological restoration and helping Tibetan herders break away from poverty. "We will make our hometown better and have a better life." Wangqing Zelang said happily that the UAS was changing the lives of the Tibetan people in the pastoral area. He was confident in the restoration of this area and hoped that some of the herders would be able to break free of poverty as soon as possible.

With the AI prescription map, the

XAG JetSeed UAS enables precision and variable-rate planting. Based on remote sensing and artificial intelligence technology, the XAG Agricultural Intelligence (XAI) can identify the weak spots on the grassland and automatically generate a "grassland AI prescription map". According to the prescription map, XAG agricultural UAS can carry out autonomous and precision reseeding, greatly optimizing planting in the grassland.

According to Fan Xuemin, director of the Department of Agricultural Mechanization Administration of the Ministry of Agriculture and Rural Affairs, science and technology are key to poverty relief. It can effectively promote sustainable poverty alleviation by focusing on the establishment of an endogenous development mechanism at local level. XAG believes that to solve the problem of poverty in pastoral areas, multiple

long-term mechanisms are needed for herders to increase their income by improving their abilities to use new technologies and tools, cultivating the concept of sustainable management, and improving the market competitiveness of products in pastoral areas.

With the implementation and promotion of aerial seeding projects in the grassland, XAG will also establish a digital grassland information platform for relevant government departments. Through UAS, Internet of Things (IoT) and artificial intelligence technology, grass growth monitoring, forage-livestock balance calculation, vegetation cover rate measurement and grassland productivity evaluation can provide more basis for scientific decision-making, for local ecological construction, targeted poverty alleviation in pastoral areas, etc.

From Zambia to China

Drones Unleashed to Defend Crops Against Fall Armyworm



Fall Armyworm Fight Goes Intelligent in Zambia

Without well-validated natural enemy or genetically modified maize, local farmers in Africa and Asia mostly resort to traditional pesticide spraying but, in some cases, find the effect disappointing. Having developed new technology to replace the old fashioned, XAG starts actively engaging in the fight against fall armyworm in some of most affected areas, such as Zambia and China.

Fraser Zhang, founder of Sunagri Investment Zambia Limited, is one of the early adopters who introduced drones into the battle against fall armyworm. As an agriculture technology service provider, he has been utilising XAG's plant protection drones for aerial spraying in Zambia since 2018.

Zambia is one of the regions where fall armyworm struck first in Africa in early 2016. The country has been facing a formidable fight, since the pests prefer to feast on maize which is the staple

crop for Zambians. According to a national household survey, up to 99% of farmers reported that their cornfields had been infested by fall armyworm, with the average yield loss reaching 35%, equivalent to an economic value of nearly USD 160 million.



Corn is considered to be a type of crop easier to grow and manage without any additional chemical treatment. However, the outbreak of fall armyworm changes everything.



Farmers have to spray pesticides to kill the pests, otherwise they would be left penniless with a devastated cropland," Fraser Zhang explained the situation.

In Zambia, use of pesticides involving

■ Zhang presented XAG's tech to President of Zambia.



hand sprayers has remained the most widely deployed method to contain fall armyworm. But obviously, this is not a safe, effective measure to ward off pests with strong migration and reproductive ability. "It is unpractical to conduct manual spraying over farmlands larger than 5 hectares, let alone a massive waste of pesticides and the risk of chemical poisoning," Zhang added.

In addition, farmers usually get more frustrated when they have sprayed pesticides multiple times but with no effect. Inappropriate use of pesticides might be the reason, as well as fall armyworm's unique natural habits that make it impossible to eliminate the pests by hand sprayers.

Fraser Zhang describes the pest as a 'crop-killing monster', since it not only eats maize but also attack 80 additional crop species, including wheat, sugarcane, sorghum and ginger. "At daytime, the fall armyworm caterpillars usually hide inside the central part of corn and sometimes burrow into the soil. When they grow older, they would generate large quantities of frass to block the whorls, making it difficult for chemicals to contact the pests."

When facing such tough situation, Zhang realised that the combat against fall armyworm needs to go aerial. So, he reached out to XAG for its precision UAS spraying solution. During last years' growing season, his team has conducted a series of field experiments and practical operations on three commercial farms, covering approximately 200 hectares of croplands.

At Kalele Farm, located in Kabwe, Zambia, fall armyworms were successfully defeated on 30 hectares of heavily infested cornfield. "The farm manager thought

his maize crops couldn't stand a chance against the pests and decided to place a bet on new tech. We utilised the spraying drones to apply chemical treatment twice, and the result was quite satisfying as a yield loss was avoided," Zhang said.

Now with a year of accumulated experience on UAS crop protection, Zhang and his company Sunagri have started to introduce XAG's drone-based spraying service to more local companies and commercial farms, including Zambia Sugar, Kasama Sugar, York Farm, Butter Mere Farm and Seedco.

This is how Zhang elaborated the solution mechanism.

"First, drones should be deployed for operation after sunset, when the nocturnal pests stop concealing themselves. Second, with the intelligent atomisation spraying system, the drone can target pesticides uniformly onto the leaves, whorls and stems of the corn. Of course, low-toxicity systemic pesticide would be more effective to increase pest mortality and protect the plants."

As for the future plan, Fraser Zhang intends to expand his agribusiness and supply smart agriculture equipment to other nearby African countries, such as Uganda, Malawi and Rwanda, which are also subject to the torture of fall armyworm.

An Integrated, Tech-backed Campaign in China

In China, the fight against the 'fearlessly' marching fall armyworm is also intractable.

Since the confirmation of its presence in January 2019, the pest has reached 21 provinces and is yet to invade the northeast corn-production area. With experience of prevention and treatment on other armyworm species, the agricultural ministry stays highly alert to this new invader.

The Yunnan Province, located in Southwest China, was the first to be attacked by fall armyworm migrating from neighbouring Myanmar. It is also the most severely afflicted region, with 86,000 hectares of croplands being infested by mid-June.

In Wenshan, an autonomous prefecture of Southeast Yunnan, XAG's local distributor Bai Anwei has assembled a professional crop protection team offering cost-effective UAS spraying service to smallholders.



I have never seen such an aggressive pest before.



Instead of a picky eater, it can encroach all parts of the maize plant including leaf, whorl, stem and cob. Especially, if the pests attack the young crop at its early whorl stage, the maize might reach a condition called 'dead heart' in which the plants stop growing anymore," Bai said.

Fall armyworm was first spotted in Wenshan at the end of March, when local farmers had no idea what it was or mistook it as other similar pests. Villagers' slow response to the ambush of fall armyworm and their initial inability to identify this species have resulted in an extensive infestation among corn and sugarcane fields. Crop failures put many farmers' livelihood at risk and forced them to switch to grow other crops immune to this pest disease.

Under such circumstance, chemical control was justified to curb the spread of fall armyworm. However, the manual spraying approach widely used by Chinese farmers is neither effective nor sustainable.

“When you spend the whole day hand spraying one infested area, you would end up finding out that the pests have already invaded other parts of the land that was originally intact. Besides, crops here are mostly grown in mountains, where large ground-based machines are not flexible enough to operate,” Bai explained the reason.

This agricultural combat requires a prompt, effective large-scale operation backed by drones, which are nimble enough to reach tall plants on mountainous area. In June, under the guidance of local authority, Bai Anwei and his team participated a three-week intensive operation with seven P Series plant protection UASs

from XAG to spray for the crops infested by fall armyworm.

These were tough days, though. During the operation, Bai and other drone operators often worked from morning till night to offer treatment on as many as farmlands, despite that pesticide spraying is most effective at night when the pests venture out for feeding. Bai is clearly aware of the best operation time, but he had no choice but to work day and night because of the large-scale invasion.

According to statistics published by the local government, fall armyworm was detected in 15,000 hectares of cornfields in Wenshan by the end of July. The affected area is too large whereas sufficient smart devices and crop protection professional are both lacking. With only 7 drones available for the operation, Bai Anwei is one of the few UAS crop protection providers in this less developed region.

Smallholders' reluctance to accept new technologies for agricultural production is one of the main reasons why drone remains uncommon in Wenshan. Nevertheless, the aerial battle against fall armyworm has changed the attitude of many local farmers who were sceptical towards agriculture drones at the very first beginning. On nearly 270 hectares of croplands that Bai's drones had winged over, the pest damage was managed to its minimum.

“XAG's drone enables a unique spraying application that makes pesticides more evenly adhere to a broader crop surface. Having witnessed its high efficiency and cost-effectiveness, farmers rushed to sign up for our service, hoping to save their broken lands,” Bai said. **X**

■ FAW prevention team in China ready to take off.



Shaping the Future of Food and Agriculture in Australia :

Drone, Regulation and the Weed Battle



As one of the world's biggest agricultural producer and exporter, Australia was the first overseas market that XAG had tapped into a few years ago. But under a heavily regulated industry, it has taken years for XAG to go through legitimate procedures and for the government to revise its own laws before the drone fleets commercially take off on fields. Now as Australia has become ambitious

to secure its position as a leading centre of agricultural innovations, it is anticipated that the adoption of agtech and foodtech would go in an even faster pace. So, what opportunities and challenges XAG would come across in this new era?

Since the land reclamation and plantation by the first group of colonists in southern

Australia, the threat of invasive weeds to Australian agricultural production and environment has never ceased. Today, 187 years later, malignant weeds are still a primary cause for increased farming costs, reduced grain production, and damaged ecosystems across Australia. The arrival of XAG's smart agriculture technology in Australia has met the urgent need for weed control.

■ *Agricultural drone takes off in Australia*



Yearly Weed Control Cost: USD 4 billion

Australian farmers are accustomed to paying large amounts of money each year for weed control or eradication. Due to the spread of weeds throughout major food growing areas and their increased resistance to herbicides, the high cost of weed control has become a serious challenge to local agricultural production.

Weeds are undesirable plants that undermine biodiversity, agricultural products, and human health. Farmland weeds are believed to be harmful to agricultural production, as they compete with crops for nutrients, water, sunlight, and space. They also hamper ventilation and lighting in fields, and raise the temperatures of local climates. In addition, they can induce pests and diseases. Particularly, parasitic weeds can reduce both crop yield and quality by absorbing nutrients from crops. Some weed seeds or pollen even contain toxins that may

poison humans and animals.

In Australia, wild oats, perennial ryegrass, and skull grass are among the most notorious “criminals” that growers are highly concerned with. “The problem with skull grass is that even chemical agents can only limit its growth to some extent, because its roots can always survive,” an owner who has been running his family farm for more than 20 years complained in an interview with local media.

A 2016 report titled “Impact of Weeds on Australian Grain Production”, published by Grain Research and Development Centre (GRDC), shows that weeds have reduced the average annual grain production of the country by 2,762,193 tons, resulting in a total loss of USD 745 million.

According to the country’s Department of Agriculture, harmful alien plants continue

to invade Australia, and more than 25% of these plants that pose severe damage or are potentially threatening to agricultural production, are weeds. In southern Australia, an average of 5 new weed species are found each year.

As estimated by the Department, the cost of weed control across the entire agricultural industry reaches up to USD 4 billion a year. To fight weeds, the national government has even developed a plan named the Australian Weed Control Strategy, and is working with all state and territory governments, and academic research institutions to seek effective control strategies and methods.



Promoting smart agriculture in Australia is as popular as selling iced water in deserts.



■ Source: Grain Research and Development Centre (GRDC), 2016

	Total yield loss (tonnes)	Total revenue loss	Total expenditure	Total costs	Total yield loss (t/ha)	Total revenue loss per hectare	Total expenditure per hectare	Total costs per hectare
Northern	611,893	\$152m	\$610m	\$763m	0.15	37.23	\$149.08	\$186.31
Central Queensland	66,473	\$18m	\$67m	\$85m	0.17	44.07	\$168.82	\$212.90
NSW NE/Queensland SE	352,541	\$83m	\$345m	\$429m	0.16	36.78	\$152.32	\$189.10
NSW NW/Queensland SW	192,879	\$51m	\$198m	\$249m	0.14	36.02	\$138.42	\$174.45
Southern	1,425,249	\$384m	\$1,244m	\$1,628m	0.13	35.73	\$115.66	\$151.39
NSW Central	185,778	\$42m	\$230m	\$272m	0.11	25.41	\$137.54	\$162.96
NSW Victorian Slopes	299,929	\$76m	\$281m	\$357m	0.14	35.17	\$129.91	\$165.09
SA Mid North – Lower Yorke Eyre	272,704	\$81m	\$237m	\$319m	0.16	47.06	\$137.28	\$184.35
SA Victorian Bordertown – Wimmera	246,370	\$75m	\$236m	\$311m	0.13	40.39	\$127.59	\$167.98
SA Victorian Mallee	371,363	\$96m	\$221m	\$317m	0.12	31.84	\$73.24	\$105.09
Victorian high-rainfall and Tasmanian grain	49,104	\$13m	\$38m	\$52m	0.15	41.87	\$119.45	\$161.32
Western	725,052	\$208m	\$719m	\$927m	0.09	26.39	\$91.00	\$117.39
WA Central	432,357	\$122m	\$397m	\$519m	0.10	28.24	\$91.67	\$119.91
WA Eastern	119,922	\$32m	\$101m	\$134m	0.10	25.50	\$80.46	\$105.96
WA Sandplain – Mallee	68,368	\$24m	\$96m	\$121m	0.07	25.46	\$101.25	\$126.71
WA Northern	104,404	\$30m	\$124m	\$154m	0.08	21.96	\$91.44	\$113.40
Total / National	2,762,193	\$745m	\$2,573m	\$3,318m	0.12/ha	32.76/ha	\$113.11/ha	\$145.87/ha

A Protracted Battle Against Weeds

To cope with the issue, Guy Coleman, a precision weed control scientist at the University of Sydney (USYD), and Michael Walsh, director of weed research of I.A. Watson Plant Breeding Institute at USYD, worked with XAG on precision weeding solutions. At a farm belonging to the I.A. Watson Grains Research Institute in Narrabri, New South Wales, a digital trial on weed control by drones was carried out. Based on the AI prescription maps, XAG's plant protection UASs made targeted weeding possible. They could atomise chemical liquid into fine particles as small as 90µm through a centrifugal atomising spray system, and downdraft generated under the propellers can effectively reduce drifting with higher evenness and deposition.

Charles Chow, head of XAG Australia, said that the advantages of drone spraying include reduced spraying pressure, higher biosafety, and less

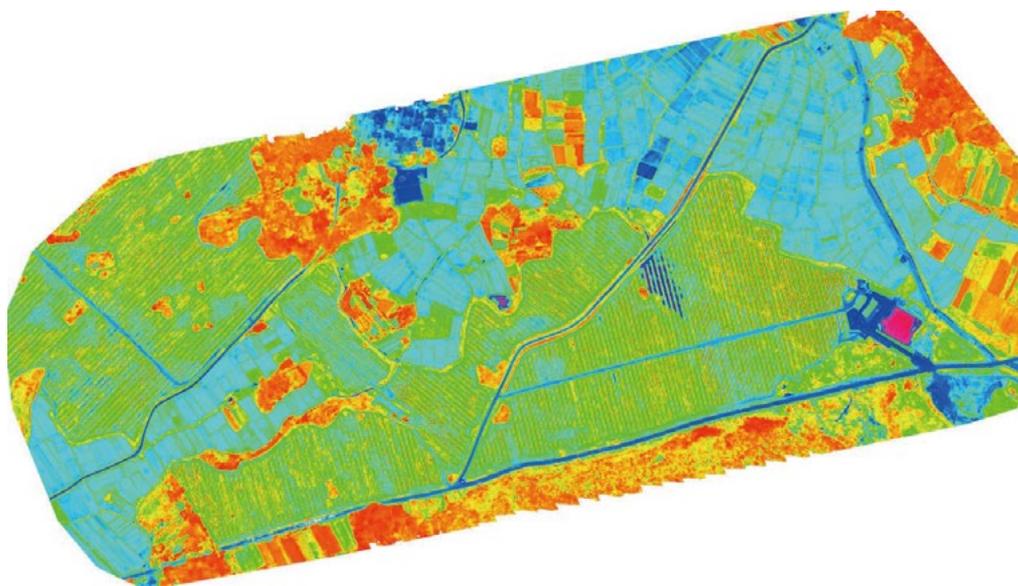
pesticide application in sensitive areas. 77% of Australia's agricultural products are exported, which means strict control over biosecurity. To achieve extensive application of control measures, it should be ensured that both technology and devices are environmentally friendly, accurate, and cost-effective.

The demonstration by XAG drones fits in the new DigiFarm project, said Guy Roth, director of northern agriculture at USYD's I.A. Watson Plant Breeding Institute. Funded by Landcare, DigiFarm is designed to allow USYD to showcase and evaluate new production technology for farming. It is also an educational platform for farmers, agribusinesses, and schools to access the latest innovations related to soil health, robotics and digital agriculture, planting, and husbandry. Michael Walsh noted that his team is now working on site-specific weed control methods, and hoped that most

of the investment in the project will be used for the "tailored" management of crop growth.

The plant protection drones used in Australia are mostly under manual control, while the XAG P Series UAS is the first fully autonomous system certified by local authorities. This shows the government's trust in the company, and also makes the wide use of drones in Australia possible.

As the Australian government further lifts control policy for agricultural drones, XAG is expected to accelerate the application of UASs to crop protection, remote farmland sensing, and many other scenarios in the country. With more customised digital solutions to weed control and prevention, the company can help local growers fight weeds across an area totalling nearly 5 million hectares.



■ Remote sensing map that identifies crop condition

New Opportunities and Challenges

However, it is a rather lengthy and bumpy road to introduce agricultural drones into the Australian market. People there have started to embrace this new-age technology, but in quite a slow pace, also with an excessive amount of caution. XAG has struggled against a whole host of certification challenges along the way.

According to XAG Australia's branch director Alex, 2019 was the first year they have been able to commercialise and adapt the drones to Australia's demands. As the regulation hurdles the years before left them grounded. Among those, chemical evaluations, long months of pilot training, and environmental impact regulations being the most prominent. Not to mention each

state has their own laws and only half the states have approved support and new laws to aid XAG. Simply put, it's a heavily regulated industry. Farmers are reluctant to experiment with new spraying techniques in fears of breaking established laws, choosing to let others try out the technology before giving it a go.

Despite the regulations, officials and the public on the contrary are enthusiastic about this technology and find the concept of smart agriculture enlightening. Australian really does want to try out small sized aerial pesticide spraying and learn from what China is doing. For them, XAG's technology has been a lifechanging method in rural areas and national parks managements.

Historically, tractors and helicopters have been hard to implement in those areas cost effectively. A lot of farms also struggle with farming alongside wild animals. For example, it is very common that wombats burrow under the ground and build extensive underground dwellings. Tractors cannot run over those land, whilst drones become the perfect solution to spray from air.

//
XAG's technology is disruptively innovative and just needs time to mature. Sooner or later, the full extent of new science, new technology will be felt in the Australian market.



It is informed in an internal report, collaborated with the University of Queensland, that XAG's atomised nozzles can minimise spray drift, even against wind currents and other natural forces. This avoids excess pollution to the neighbouring farms and water reservoirs. As a result of such in-built intelligence, the chance of misuse or abuse of machines or chemicals is largely reduced. As an environmentally sustainable practice, the drones are designed to be ready for farmers to use, out of the box, with the goal to realise precision agriculture.

The great news is that, now we can see drone technology has gradually

flourished in the multi-billion dollar weed elimination industry. Large scale tractors are more competitive in the vast Australian farms, whereas XAG's drones are extremely efficient at reducing weeds using cutting-edge spot spray functions onboard the aircraft. It is only a matter of time and regulations before more farmers will truly experience the possibilities of XAG's aerial smart solutions in Australia.

Year 2020 might come as a new beginning for XAG Australia to clear the slate and start fresh. It is forecasted to be a prosperous and productive year ahead. Dozens of government contracts and service jobs have been commissioned of XAG Australia by the Australian

government in their efforts to rehabilitate bush fire burned land. More than half of Australia has been scorched. And XAG's seed spreading solution can make a huge positive impact in this area.

Meanwhile, modifications and upgrades to XAG's current fleet to meet government standards are on the agenda, such as a seamless toggling option between manual and autonomous control. No matter what obstacles XAG Australia may face in the near future, we are certain that it will be one step closer to achieving the goal to support science based reliable and sustainable farming systems with autonomous and intelligent technology. **X**

■ *Spraying vineyard in Australia*



Korean Drone Enthusiast's New Adventure

With the farming population notably falling by 42% since 2000, South Korea has long been experiencing a severe shortage of agricultural labour. However, the advent of smart, automated technologies such as drone and AI has encouraged urbanites, especially the young generation, to start agribusiness.

XAG, through its drone-based precision spraying technology, has been part of this wave to bring vitality back to the rural economy. And among those city dwellers turning to farming, there is one man, aged 65 years old, who has been dedicated to the indigenisation of XAG's agriculture drone in South Korea, breaking the negative stereotype about the seniors.

Become Tech-savvy on Drone

Meet Jun Bon Soo from South Korea, one of the early adopters of drone – an aerial unmanned system (UAS) seen as a fancy sci-fi vision by many. His fascination with drones has taken him further into an untapped territory, utilising drones that can practically fly themselves without human control to help local farmers spray pesticides and prevent crop diseases.

“Tech-savvy” is no longer a word

exclusive to describe millennials. As a former middle school teacher, Jun Bon Soo has just reached 65 years old, yet he given up his peaceful retirement life in Seoul and thrown himself into an unknown adventure promoting agriculture drone and smart farming.

It is quite unusual that a man in his 60s can embrace the nascent drone technology without any skepticism. “After I retired from school five years ago, I became a professional drone pilot as well as the head trainer of a local drone training centre. This all started because of my strong passion for aviation and space.” Jun talked about his career life with great confidence.

When asked what exactly had attracted him to tap the agriculture industry, Jun told a story about how he encountered an agriculture drone featured the unique red-and-white design. “As a drone pilot, I have to keep myself up-to-date on the latest innovations in industry. During research, I got to know a prominent brand called XAG which developed agriculture drones and other digital farming tools.”

“Then I was invited to a live demonstration of XAG's plant protection drone, where I was completely drawn to such high tech at first sight,” Jun further explained with a hint of smile. “I have never seen a drone like that - fly fully autonomously in such stable condition.”

Drones have a huge potential to make agriculture cool again – they can effectively collect field data, spray pesticides, spread seeds and monitor crop growth without damaging the plants.

As for Jun Bon Soo, this is a kind of technology that would transform South Korea's agriculture industry in which the application of large ground-based machines is limited on segmented land and complex terrains such as hills and mountains. Managing a farm is still considered a menial task, requiring an overwhelming load of physical labour.

“So, the idea of joining the UAS plant protection industry came after I recognise the immense value behind such technology. Particularly, I found XAG's P series drone highly flexible and adaptive; it's atomisation spraying system is of great importance when it comes to securing micron-level precision requirement,” Jun said.

Challenging but Rewarding New Adventure

Operating an agriculture drone for pesticide spraying is a completely different experience from employing a consumer drone for aerial photography.

Despite enriched experience in UAS operation, the transition to an agriculture drone pilot was physically and mentally challenging for Jun.

It took him more time and energy to learn a new technology that requires a certain level of memory, focus and agility, he said, but fortunately he did not need to start from scratch. Through one month's constant, tough training and practice on field, Jun finally got himself fully familiar with every step of the operation procedure including RTK set-up, field surveying as well as flight and spraying parameter settings.

Though challenging, this job is also profoundly rewarding. Jun Bon Soo purchased XAG's drones and founded

his own company with a young partner in Daejeon, the 5th largest city of South Korea, just three months ago, providing precise, safe UAS plant protection services. "Since founded, we have received a steadily increasing number of orders from nearby farmers. We hope to help rejuvenate the agriculture industry with this intelligent solution," Jun says.

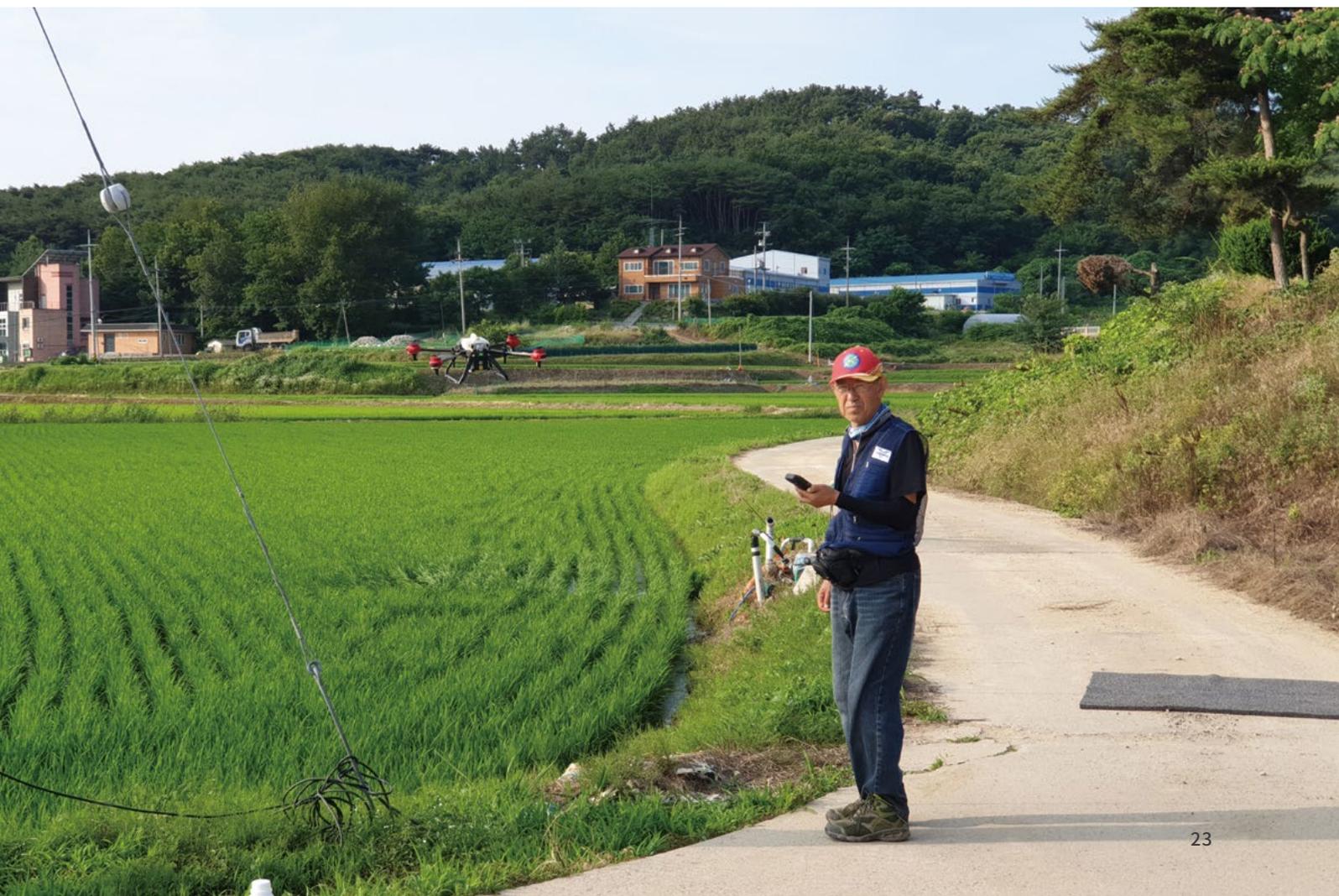
Now, as an agricultural entrepreneur, Jun spends much of year travelling around the country to scale his business and promote XAG's precision spraying technology to local farmers and consumers. Training drone pilots also remains an important task of his new career.

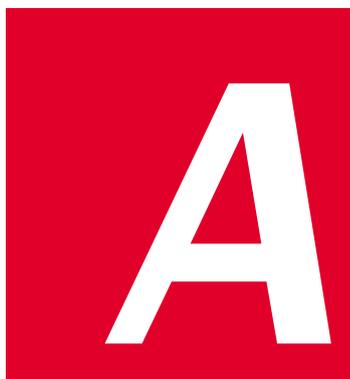
In his 60s, Jun acknowledges that his ability to manage tricky situations when

handing an agriculture drone might not be higher than that of the young operators. But those young people, coming back from cities with lack of know-how in farming and agri-tech, need someone like Jun to help them accommodate to the rural life.

Jun compares himself to a coach of a soccer team. "It's obvious that a player would perform better than his coach on court. But the coach has the ability to improve his players' skills and make the whole team become much stronger with his wit and expertise." **X**

■ Jun Bon Soo managed to use drones in a short time and quickly joined farm work.





Story of XAG & Airbus

XAG and Airbus have jointly incubated a drone cargo delivery project named Vesper, which was announced in a press conference on 25 November 2019. And in a limited delivery trail in Guangzhou, China, a bowl of noodles was delivered from 1.6km away by a retrofitted XAG P30 aircraft and it took only 3 minutes to arrive. A young Chinese company working with the global aviation giant to advance social progress through technological innovation is epoch-making.

The first contact between two companies may be due to a speech, or the sharing of ideas at a conference. When the relationship deepens however, it relies more on the communication and interaction between completely different systems, as well as the mutual complementarity of values and codes of conduct.

A Blind Date Across The Ocean

Justin, Co-founder of XAG, was the person who approached Airbus for the first time. For him, establishing a business partnership is like developing romantic relationship. Introduced by European Aviation Safety Agency

(EASA) representative, Javier Viced, Justin met with Jana Rosenmann, Senior Vice President and Head of Unmanned Aerial Systems at the Airbus Defense and Aerospace Group, as well as Daniel Buchmueller, Vice President and Head of Drone Cargo Airbus (DCA) at Zhuhai Airshow in 2018. They discussed the possibility of low-air-space cargo delivery in cities, and became interested in collaboration.

They wondered how XAG could have tens of thousands of UAS with a payload of more than 10kg each, operating systematically for farm fields. Daniel was inspired into considering using XAG's P Series Plant Protection UAS for cargo delivery.

After rounds of brainstorming, the two sides envisioned giving full play to drones in future delivery scenarios. Returning to China, Justin conveyed Airbus's intention to CEO of XAG, Peng Bin.

In May 2019, XAG made an official proposal to Airbus. Daniel, together with the newly established DCA team whose members had different yet strong professional background, showed up at XSpace-headquarters of XAG. The team came up with a business performance plan, analysing the feasibility and target market of drone cargo delivery in China.

Finally, the potential for food delivery with drones to replace manual labour drew their attention.

In the past 5 years, China's instant delivery market has generated an annual growth rate of 48% on average. In 2017, over 40 billion packages were delivered. On the largest takeaway platform in the country, each delivery person was paid an average of RMB 7 for each order in 2017, which rose to RMB 9.5 in 2019, and is expected to rise to RMB 11.5 in 2021. The catering and delivery industry is predicted to continue to grow at a rate of 10.9% in the next five years. The Chinese market is worth about USD 40 billion – twice the size of the US market and 20 times that of Germany.

Compromise on Values and Codes of Conduct

Based on consensus on the huge potential of delivery drones, as well as the trust in XAG's expertise on autonomous flight and precision control, the Airbus team agreed to collaborate during its first visit. Then, the two sides entered into a confidentiality agreement, held R&D launch meetings, drafted

protocols on R&D, testing and trial operation, and released prototypes.



XAG's well-established profile in UAS has given Airbus new insights into low-airspace mobility. Project Vesper has nothing to do with north-south cooperation, but more of pure technical collaboration.



After a joint R&D agreement was signed at the Summer Davos Forum in Dalian on July 3, the Vesper MVP (Minimal Viable Product) built on the P series started undergoing modifications. The entire solution included takeaway and delivery storage cabinets, UAS take-off and landing platforms, battery replacement platforms, flight platforms, mounting systems, operation cloud platforms, and delivery dispatching software. It is planned that at the initial stage of Vesper MVP 1.0, trial operation scenarios will be set up in large industrial parks, universities, and delivery and takeaway collection sites; takeaway and delivery storage cabinets will also be placed outside catering companies and university dormitories. Through the point-to-point operation of delivery and pick-up at take-off and landing platforms, as well as the battery replacement by dedicated operators, the smooth operation of the instant delivery service can be guaranteed. The success from product modification

to trial operation is inseparable from the alignment of values between the two sides. In terms of products, XAG values fully autonomous operations based on digital infrastructure, precise navigation networks and cloud platform management. Its concept of intelligent dispatch and unmanned management goes in line with Airbus's vision for drone cargo delivery. Commercially and socially speaking, the two sides have also reached consensus on supporting delivery people, reducing the danger of delivery by scooters, lowering labour costs, and joining hands with large delivery platforms.

When it comes to corporate values, both companies have infused their DNA into the product and business design. From the perspective of designing large passenger aircraft, Airbus doesn't have to face its end users directly – all the design related to cabin service and passenger interaction is customized by airlines. The priority of their engineers is always safe and economical flights, while the engineers of XAG are inherently positioned to directly interact with users and farmers. They frequently visit farm fields to find pain points, as well as the best ways to liberate manpower from repeated and mechanical work. As the two focuses merge, there comes human-oriented security, which is embodied by the partnership itself, as well as the products developed. This includes intelligent terminal operation, the introduction of parachutes, the safety division of triggering zones,

and the consideration that the margin of landing platforms should be larger than the maximum blade pitch of rotors.

Following the Airbus x XAG Joint Press Event on November 25, many were asking about the meaning of Project Vesper. Vesper originally meant "evening" in Latin, and was later used by religions to refer to evening prayers and hymns. It is also an alternative name for the planet Venus when it becomes visible to the naked eye. We named the project Vesper to indicate that from dawn to night, our drones are navigators delivering goods safely and accurately. This is the fusion of product values between XAG and Airbus, while the codes of conduct have also been reorganized and aligned during the journey of cooperation.

"Many logistics companies have already begun to deploy intelligent delivery cabinets, and are also proactively discussing and developing air delivery solutions. Harnessing Airbus's leading position in air traffic and topological networks, as well as the core technical advantages of XAG, Project Vesper is prepared to offer safer and more reliable UAAs and build air logistics infrastructure in cities. Connecting merchants, logistics companies and consumers via an open and powerful platform will radically change the livelihoods of people around the world." Said by Daniel Buchmueller. 



Stepping into the Global Arena:

XAG Made its Debut at Hanover Agritechnica 2019

Starting from a small drone manufacturer 12 years ago, XAG has now aiming for a bigger marketplace outside China. As the world's largest agricultural trade fair, Agritechnica is surely one of the first steps towards empowering global farmers with drones and robots. For XAG, joining Agritechnica was not only about winning sales, but also about demonstrating practical, innovative solutions to address the global challenges of agriculture.



Drone, New Favourite of the Show

Among the exhibits, XPlanet® is XAG's all-new high-performance unmanned aerial system that combines atomisation spraying and intelligent spreading technology. It is designed to effectively conduct seeding, fertilisation, chemical spraying and feeding at centimetre-level high accuracy on all terrains.

All these presented technologies seamlessly integrate to form a closed loop sustainable agroecosystem, featuring digitalisation, automation and intelligence. Based on the HD field maps collected by XMission, XAG Artificial Intelligence (XAI) can identify field edges and obstacles, locate fruit trees and recognise weed/pest diseases as well as generating prescription maps to guide autonomous drone operation on selective lands.

Variable-Rate Application (VAR) can therefore be achieved to spray and spread where it is needed. Only the infected part of lands would be targeted with optimal high-concentrated dosage to reduce 30% chemical use and 90% water.

Precision Farming on the Agenda

Such innovative precision farming technology has raised huge attention from visitors of all types, including farm owners, agricultural machinery distributors, agrochemical conglomerates

and agricultural experts. They are looking for an alternative crop protection solution that is more precise, flexible and eco-friendly, without causing crop damage or soil compaction. Drone is deemed to be a novel, subversive solution.



Drone is a perfect tool to cultivate land that is difficult to handle, where big tractors are not fit for the smaller plots.



Agricultural drones, as nimble and flexible as they are, can access fields that large tractors are difficult to handle. Many previously exhausting farming practices, such as spraying for sloping vineyard and mountainous orchards which used to take manual labour days to complete, now only takes a few hours.

It was an impressive, successful debut for the Chinese agriculture technology company. When looking around, the venue was primarily dominated by large ground-based machinery, and this made XAG even more outstanding in the crowd with its precision agricultural drones.

Employing digital technologies to optimise agricultural inputs and improve crop yields, precision farming is the key to reshape a sustainable food system. It is of great importance that XAG and other stakeholders have reached such a consensus at Agritechnica 2019. **X**

Organised twice a year by the German Agricultural Society, also known as DLG, Agritechnica kicked off in Hanover, Germany on 10 November 2019. This year's Agritechnica covers an unprecedented exhibit area of 40 hectares, where 2820 exhibitors from 53 countries showcased a complete range of advanced agricultural machinery and digital farming platform from seeding, crop protection, harvest to storage. This has attracted nearly 450,000 visitors and 30% of them were professional audience. Agritechnica is truly a huge global meeting place for the farming community.

As a newcomer to the show, XAG, for the first time, demonstrated its smart agriculture solutions to an international audience of 152 countries. A series of fully autonomous drones and farm monitoring sensors, including XPlanet® Agricultural UAS, P Series Plant Protection UAS, XMission survey drone and Agriculture Internet-of-Things (XIoT) System, debuted in Precision Farming Technology pavilion.

XAG Wins Top Honour

'Best Innovation in Precision Farming Technology' at Crop Science Awards 2019

XAG becomes the laureate of Crop Science Awards 2019, which was deemed as the 'Agri-Oscar' of the crop science and technology industry, another milestone marked on the prize wall of XSpace.

Crop Science Awards, with a decade history and known as the Oscar of the agriculture industry, recognises the best-in-class scientific and technological solutions as well as leadership initiatives in the crop science market. Competing with conglomerates such as Bayer, Corteva, FMC and ADAMA, XAG got a stamp of global approval by winning the much-coveted award on Best Innovation in Precision Farming Technology.



From Red Dot Design Award to Crop Science Awards

Two years ago, in Germany, XAG won the Red Dot Design Award for its P Series Plant Protection UAS, earning the most sought-after seals of quality for good industrial design. This was the first time that a crop protection product was awarded in an internationally established design competition. However, for the agricultural drone, a good design not only appears to look cool but is also able to handle tough environment in fields and, most importantly, help farmers increase productivity and crop yield without harming the planet.

For years, XAG has been on the endless journey of adapting its crop-dusting drone to user needs and building an integrated smart agriculture ecosystem. And 12 November 2019 was obviously a special, memorable day for XAG, who grows from an unknown drone start-up to a globally recognised agri-tech company.



Apart from all the members of XAG, this honour also goes to the next generation of farmers who play key role in making smart agriculture possible.



On that night, at One Moorgate Place, London, XAG earned Best Innovation in Precision Farming Technology for its smart agriculture solutions at Crop Science Awards 2019. This recognises XAG as the trailblazer of precision agriculture, who innovatively integrates drone, Artificial

Intelligence (AI) and Internet-of-Things (IoT) to build a sustainable agroecosystem, with the aim to grow more nutritious food with minimal ecological footprint on earth. And XAG was the first Chinese agriculture technology company to win this award.

More than Drone

Crop Science Awards, previously known as Agrow Awards, is a prestigious annual award launched 10 years ago by Agribusiness Intelligence. The 2019 award consists of 15 categories honouring excellence in different realms of agriculture, such as digital farming, precision farming and crop protection formulation. Those being shortlisted are carefully evaluated by an international panel of esteemed judges with years of experience in crop science.

XAG was selected as the finalists in the following three categories: Best Innovation in Precision Farming Technology for accelerating developments in precision agriculture technology, Best Application Technology Innovation for improving the precision and safety of pesticide application, and Best Company from an Emerging Region for making the greatest contribution to the crop protection industry.

As the winner of Best Innovation in Precision Farming Technology, XAG makes a successful transition from an industrial drone manufacturer. The accredited smart agriculture solutions are crafted to help farmers optimise the use of agricultural resources, improve crop yield and reduce environmental impacts. Drone is only one of the important elements under a bigger scheme. To be more specific, the smart agriculture solutions can be broken into four aspects. They include building digital farming infrastructure such as Real-time Kinematic (RTK) navigation network and high-definition field maps, developing

automated drones and robots for precision operation, connecting land, crop, farmers and consumers through the Agricultural IoT System, and cultivating Agriculture AI for prescription map application.

For example, XAG has designed the fully autonomous agricultural drones, which can effectively navigate at centimetre-level accuracy for precision crop spraying, granule spreading and seeding, even on complex terrains. Powered by RTK positioning, atomisation spraying and AI prescription, this unmanned aerial system has effectively helped local farmers address different crop protection problems, ranging from weed control and bee pollination in Australia, defeating fall armyworm in Zambia and warding off pinewood nematode in South Korea to large-scale cotton defoliation in China.

“This honour also goes to the next generation of farmers who make smart agriculture possible,” said Justin Gong, Co-founder and Vice President of XAG, who received the award at the ceremony. Gong pointed out that the future of agriculture lies in the fast-growing smallholder economy and the scale-up of precision farming technology. With stronger production adaptability and flexibility, smallholder farmers, when empowered by nimble, intelligent technology, can produce more nutritious food while meeting consumers’ increasing demands for healthier diets.

XAG has also received the Highly Commended honours in Best Application Technology Innovation for its iRASS™ Intelligent Atomisation Rotary Spraying System and Best Company from an Emerging Region. Since tapping into the ever-evolving agriculture technology company, XAG has now introduced 42,000 drones into the world’s remote rural area and served over 20 million hectares of farmlands for 6.37 million farmers. **X**

Smart Agriculture

Solving Chinese Issues, Boosting Global Growth

Author / Justin Gong

The Sino-U.S. trade friction has been a highlight of discussions in the past two years. Besides the comparison of high-tech industries between the two countries, the gap in their agriculture sectors has become a topic of wide concern as well.



Constraints of Large-scale Agriculture, a Way out for Small-Scale Farming

In early March 2019, Peng Bin and I drove across the United States from Los Angeles to New York. Along the journey spanning 5,500 kilometers, we came across hundreds of large farms in 14 states. Driving on the immense central plains, we barely saw signs of human habitation except for oncoming trucks once in a while. Instead, huge agricultural machinery and sprinkler irrigation facilities were frequently seen on both sides. This reminded me of an argument: "The US owns a population of 330 million and about 3.5 million of them are engaged in agriculture, accounting for less than 2%. It means each American farmer can feed 94 people and there is also surplus to be exported. There are 1.3 billion Chinese people and 330 million are farmers, so each of them can only provide for 4 people. To conclude, the agricultural productivity in the US is 20 times that of China." While biased, this claim indicates the inevitable competition between two agricultural economic models – large-scale agriculture and small-scale farming.

As a former colonial country that has

gone through land transfer for nearly 200 years, the US is now home to about 2.2 million large farms – each covering an area of over 150ha. From the 1920s, the farms started to use large agricultural machinery and concentrated on selected crop varieties. Together with the extensive use of fertilizers and pesticides, the country welcomed a sharp increase in both agricultural scale and output. Later in the 1960s, it became the world's largest agricultural country. While boosting efficiency, scaled production posed threats to the natural environment. From the 1970s, due to monoculture and overuse of pesticides and fertilizers, the local rural ecology kept deteriorating, leading to reduced biodiversity and frequent natural disasters. In fact, traditional large-scale agriculture is similar to industrial production, which requires the efficient allocation of gathered resources and capital to obtain greater output. However, since most natural resources are unlikely to be recovered, this conventional model is deemed unsustainable in the long run.

When it comes to market supply and

demand, traditional large-scale agriculture faces another challenge – the flexibility of production and sales. For maximum productivity, large farms in the US usually choose to produce one single crop, and farmers tend to grow basic food crops such as maize and wheat, or base oils such as soybeans and other protein crops to address the risks caused by changes in market demand. The US financial crisis in 2008 led to declined domestic consumption capacity in the country, forcing farmers to be a part of the global supply chain, which exposed them to changes in international market demand. This shrank the scale advantages of many American farms. Smaller farms with less infrastructure (loans) responded quickly by growing diverse agricultural products that catered to the international market and making extensive use of new technology. These farms rose rapidly after 2010 and became a new driving force for American agriculture.

The other model – small-scale farming, is adopted by most countries and regions around the world. Limited by land and output value, small farming households



do not use large agricultural machinery, nor do they participate directly in the futures trading in international markets. The agricultural products produced are usually for self-sufficiency or sold in local markets. China is a typical country that practices small-scale farming, where small farming households account for 98% of all the agricultural entities in the country. The agricultural mechanization and product circulation here are far less active than those in large-scale agricultural countries such as the US, and there is a large gap in farmer incomes between the two countries.

The small-scale farming economy was once regarded as the largest restriction on China's agricultural and rural development. However, in recent years, new technologies such as UAS, robotics, AI, IoT, and cloud computing have brought new competition opportunities to small farming households through technological innovation and differentiated cultivation. Machine power not only improves farmland productivity and reduces costs, but also helps produce high-quality and diverse agricultural products. In contrast, large-scale agricultural economies represented

by the US are more likely to lose competitiveness due to monoculture and lower flexibility in the ever-changing global consumer market.





Yesterday's Drawback, Today's Advantage

Small-scale farming economy, urbanization, consumption upgrades, corporate innovation, and policy support are the five engines driving the rapid development of smart agriculture in China. The small-scale farming economy was born thousands of years ago in the country. Compared to the US, it is more decentralized and isolated, with fewer opportunities to use large ground machinery. Instead, Chinese farmers have much larger demand for small-scale intelligent production tools. The past two decades have seen an increasing shortage of labor in Chinese rural areas caused by urbanization and industrialization, and labor costs have continued to rise. As fast economic growth catalyzes consumption upgrades, urban consumer demand for high-quality food has in turn urged farmers to improve their production methods. Meanwhile, enterprise innovation and intelligent manufacturing are quickly transforming both new technology and new finance into new tools for extensive application in rural areas. The above four factors, coupled with sustained policy support, are powering the rapid development of smart agriculture in China. Traditional agricultural production that is blind, crude, and inefficient, has been gradually phased out and replaced by efficient, low-consumption and sustainable technology. Such a

developmental environment – where the five factors exert a combined force, is unique in the world.

In the past, agricultural mechanization was rare in Yunnan, Guangxi, Guizhou, and other places of China due to their mountainous land. Local farmers relied entirely on manpower to apply pesticides to the crops grown in terraces. As the production process was constrained by labor, there was great uncertainty in the output, quality, and price of agricultural products. Today, 3D mapping of farmland in hills is possible with drones. Integrated with AI and variable precision spraying, fully-automatic plant protection can be enabled for fruit trees, tea gardens, and terraces – at a price lower than human labor. This is the result of the coordinated development of a series of new technologies and business models in rural areas. Regardless of land size and features, HD maps, satellite navigation, mobile Internet, intelligent agricultural machinery, and autonomous driving can play a huge role in areas



where traditional agricultural machinery is largely limited. Therefore, we can now enjoy “Chu’s Oranges” grown in the microclimate zone at an altitude of 1,800 meters in Xinning County, Yunnan, as

well as specialty coffee beans planted in the mountains of Xishuangbanna. This is the future of small farming households in China, as they can grow small scale, premium, and diverse agricultural products favored by urban consumers.

The emergence of smart agriculture has also made data the most essential means of production and the basis for the growth of new finance in rural China. As precision agricultural equipment and intelligent hardware gain popularity, agricultural monitoring and management has become more scientific and convenient. Digital records allow farmers to obtain equal credit, loans and insurance support at a lower cost. Leveraging data on crops, environment, growth, management methods and yield forecasts, insurance companies and financial institutions can accurately quantify the production behavior of farmers, better control credit risks, and improve the quality of financial insurance services in rural areas.

Over the past three decades, China's productivity has been dominated by the industrial zones in cities and their surroundings, but as new technology and new finance take root and gain momentum in rural areas, agriculture is expected to become the core of China's new economy.

Solving Chinese Issues, Boosting Global Growth

At the same time, the upgrading of consumer market and the advancement of smart agriculture in China are also bringing changes to other countries and driving global economic growth. For example, Latin America and some African countries grow many high-value crops such as grapes, coffee beans, and cocoa. Although these are important raw materials supplied to multinational food companies in developed countries, the profits they generate are marginal. Due to changes in the global climate

and rising local labor costs, farmers in these regions are also facing challenges. However, China's consumption upgrade has created new choices for local farmers. Some of them have started to grow various kinds of high-quality grapes, coffee beans, and other agricultural products in small scale to be sold to China. Our agricultural drones and intelligent planting management technology are also helping them better manage their farmland and reduce costs. We are seeing increasing

demand for agricultural drones and other smart devices from around the world, especially Southeast Asia, Latin America, and Africa. XAG now offers agricultural drones and smart agriculture solutions to 42 countries. Moving forward, drones and robots are expected to manage crops in these countries, with production costs perhaps lower than those in the US today. Moreover, agricultural products grown in areas with diverse landforms and climate are of higher quality than elsewhere. With their rural



areas unleashing huge potential, these countries are expected to grow into economies with larger global influence. From this perspective, the development of China's smart agriculture is likely to greatly change the global landscape of agricultural economy and trade.

As China keeps developing smart agriculture in these years, I have once again seen the force driving human evolution – it is generated by the collision between technological and social progress.

Once smart agriculture unshackles the small-scale farming society, the energy released will not only bring new growth to the global economy, but also address many development problems of human society at this stage. **X**





Initiate Ground Air Disinfection in COVID-19 Battle

Since the emergence of new COVID-19 coronavirus outbreak in China, XAG has leveraged its world-leading agriculture technology and pledged 5-million-yuan special fund for epidemic containment. XPlanet drones and R80 robots have been deployed by XAG to disinfect affected areas in a series of demonstrations, which helps provide solutions for improving public hygiene and reducing the risk of virus transmission via contaminated surface contact.

According to XCloud, the only crop protection UAS cloud system authorised by Civil Aviation Administration of China, up to February 28, 2020, a total of 370 professional teams with over 2,600 XAG agricultural drones have voluntarily joined the disinfection operation, covering an area of 902 million square metres in China's 20 provinces.

Intelligence and Automation to Fight Against COVID-19

While global scientists are devoted to accelerating diagnostics, vaccines and therapeutics of this highly contagious virus, automation technologies also contribute at the frontline. For example, drones and robots are replacing hand sprayers to release disinfectant in public places. Infected zones, densely populated areas, epidemic prevention vehicles and waste collection points are the main targets that require site-specific disinfection to kill the virus.

Based on advanced technologies such as robotic control, automated driving and high-precision operation, XAG's agricultural drone and robot can be easily adapted to address the urgent need for fast, accurate disinfection.

Compared with manual spraying, these intelligent devices can protect operators from unnecessary exposure to virus and disinfectants. They can automatically disinfect a wider region safer, as well as targeting a specific area to embark on spot spraying and deep clean.

Instead of operating independently, drone and robot can combine together to reap the benefits of ground air disinfection against novel coronavirus. Covering a much wider area from the air with variable flying speed, one XAG drone in a day can disinfect 600,000-700,000 square metres to maximum, a task would normally take 100 workers to complete. Also, with the ability to precisely control output, it consumes one fifth less disinfectant than traditional

approach such as handheld spraying.

However, drone has its limitations, unable to handle complex environment with high-rise blocks or corridors where small robots can easily fit in. XAG has launched the R80 agricultural utility vehicle for precision crop spraying, monitoring and transportation. Though originally designed as a farm robot, R80 can also be applied in various scenarios such as disinfection, using its 360° high-speed intelligent JetSprayer. With an 80 litres capacity and centimetre-level navigation system, such nimble unmanned device can traverse narrow spaces, automatically avoid obstacles and disinfect targeted areas from different angles, without dead ends.

Application Scenario: Police Vehicle, Hospital and Kindergarten

After rounds of research and field testing, XAG has been collaborating with government to carry out a series of ground air disinfecting demonstration at potentially coronavirus-hit areas, such as hospitals, industrial parks and schools. According to the standard operation procedure for aerial and terrestrial disinfection, high concentrated disinfectants are more effective on drone and robot spraying. When flung out from the drone nozzles or projected by the





robot jet sprayers, disinfectant would be diluted with moisture in the air over time until it falls on the surface to create a virus-free environment.

Drones can follow police forces and medical staff on duty to disinfect epidemic prevention vehicles moving between affected and unaffected areas. For example, on February 5, XAG worked with Tianhe Public Security Bureau in Guangzhou, China on testing of high-accuracy disinfection for police car. Simply marking out the boundary of the parking zone as well as the position of the vehicle on a high-definition map via mobile app, the operator can remotely directed the drone to take off. The drone then automatically flined to the designated area, hovered over the car and sprayed disinfectant 3-5 metres above the roof. Result shows that 99.8% of the car surface area was covered in disinfectant agent.

At the Third Affiliated Hospital of Sun Yat-sen University (Lingnan Hospital), the first-ever ground air disinfection

exercise took place a week later to empower frontline medical staff. XAG introduced its R80 robot, in collaboration with drones, to disinfect ambulance, quarantine area, and crowded passages. R80 could atomise the disinfectants into micron particles as small as 50 μ m, and spray as wide as 12 metres, which enabled better adherence and therefore improved the effect of disinfectants on hospital surfaces.

Schools are also among one of the critical scenarios that might have a higher risk of coronavirus infection once the students return. With the help of local Emergency Management Bureau, XAG has conducted another disinfection demonstration using unmanned devices at Guangzhou LieDe Kindergarten on February 12. The R80 robot precisely executed the self-driving route that was pre-programmed on smartphone. First activated at the school gate and passing through playgrounds, halls and other public areas unobstructed, it constantly switched the directions of JetSprayer to implement three-dimensional disinfecting

even on blind spots. Meantime, the drone was operating in open spaces to cover a wider outdoor area, including the garden and rooftop playground.

In such places where lorry cannot access, the previous solution was to hire 4 to 5 workers to disinfect the entire kindergarten, which took hours to complete. But now with drones and robots working in synergy, disinfecting a total area of 7,836 square metres was done in only 5 minutes.

The new coronavirus, officially named COVID-19, was first reported in Wuhan, China in late December 2019 and has now escalated as a global threat. At such critical stage, high tech companies should step out with their innovative solutions to address public fear and protect emergence responders at large. **X**

Growing with Plant Protection for a Decade

Tao Liyuan mentioned that he really likes XAG's Sustainable Farming Programme, which reminds him of beautiful farms in California, farmers in plaid shirts and jeans, and cheerful country music. In his imagination, future farms must be equipped with professional technicians who manage the farms and fulfill the duties of PCAs (Pest Control Advisers), with advanced and complete expertise.

Acquaintances of Tao all know that he can immediately identify diseases, insects, and pests suffered by all kinds of fruits and vegetables – regardless of whether or not you have seen the crop before – and provide solutions. Of course, each professional was once a novice. The two years after graduation was the period when Tao learned a lot and grew into a qualified technician.



First Steps

In 2009, Tao Liyuan was assigned to work in the northern Hebei region (the half of Hebei Province including Tianjin and Beijing), providing farmers with new plant protection services. Local staffs always introduce Tao as a great teacher to farmers and promise to them that Tao would provide them with advanced agrotech. To live up to the expectations of the farmers and his company, Tao kept practicing and improving himself under high pressure. During the day he observed the growth of crops, and at night, he collected data and prepared teaching materials for the next day. He gave his first class in a winter at Xiaolin Village, Changli County, Qinhuangdao. In a crowded small cabin, the farmers

listened to Tao share knowledge on scientific planting with interest.

Hebei is home to a huge variety of crops. Each of his day Tao learnt to recognise a new kind of crop and prepare a technical lecture on it. Through chatting with different farmers, he learnt many of the technical and marketing skills, including how to communicate effectively with farmers, how to deliver easy understanding lectures, and how to give examples. To him, Hebei was the best place to train agricultural technicians, all other crops are available in the province except for bananas, mangoes and citrus. Being a technician there meant having to answer countless questions on pesticide use every day.

Ten years after, Tao still appreciates the short-term training he received at the

time. Afterwards he became the first public class lecturer at XAG Academy. He found that many young people engaged in agricultural production lacked knowledge on plant protection, which limited their career development. This reminds him of his original intention of joining XAG Academy: to make every new-generation farmer a comprehensive plant protection expert.

Apart from 1000 lectures he delivered across the country, Tao has also consolidated his 10-year experience in agrotech and plant protection into popular science short posts and online courses to share with his students. This young and capable specialist has allowed more people to realize that the future of agriculture depends on the training of agricultural talents today.



Career Shift

In his first four years of work, Tao admitted that his goal was quite clear: to achieve better performance and earn more money with plant protection technology. However, this made him neglect the bigger picture. He said it was a result of “position rules mind”, leaving his career limited to product designing and marketing.

In 2011, WeChat became a hit. From 2013, Tao began to use Taobao. The two platforms greatly impacted him. He somehow realized that information was becoming increasingly transparent. Of course, the agricultural supplies industry in northeast China was still troubled by fake goods. Aside from several import companies and large herbicide producers, most suppliers of agricultural pesticides, fungicides, and foliar fertilizers on these platforms were unqualified.

As science and technology keep driving social development, no major change has yet taken place in the agricultural sector. In Tao's words, “the apples grown by farmers still taste the same, and the yield of rice has remained unchanged for ten years.” He was suddenly aware that the people engaged in agricultural supplies and plant protection had failed to play their role in empowering farmers. By staying the same, they had become a source of hidden danger. There was only one way out: change.

Encounter with XAG

In 2016, Tao attended a conference in Nanchang, where he encountered the XAG P Series Plant Protection UAS and Peng Bin, the founder of XAG. After listening to Peng's speech, Tao suddenly realized the broad potential for drones in

the agricultural field. He became greatly interested in the new technology, and joined several online chat groups to share what he knew about pesticide use and other plant protection technology.

Tao was most impressed by Peng's understanding of a word: vitality. Our daily lives, societal progress, and economic development all depend on every individual and organization contribute their vitality. Such vitality comes from people who care to make a difference. We want farmers to apply fewer pesticides, to make crops grow safer, to protect the environment, and to make the countryside more beautiful. All these seem to be the responsibility of the Ministry of Agriculture, but isn't this a vision that everyone looks forward to?

As someone who cares and wants to make a difference, this message resonated with Tao. He was convinced that the future belongs to the young, and





the future of the industry depends on the development of young talents today. After learning about the XAG Academy, Tao was excited. He came up with a special column where he could write about agricultural skills needed by young people and agriculture enthusiasts. Once, he was blamed by a retail store customer for reducing insecticide use by farmers. But to him, improving these values, enhancing service capabilities, and fostering greater environmental awareness are issues that everyone needs to be concerned with.

Tao said, plant protection enabled by UAS has already caused great impact in the market for agricultural supplies in northeast China, and the change also indicates the change of business models. However, he firmly believes that people with "vitality" can easily address future challenges.

Lifelong Learning

On January 19, 2019, China welcomed the first batch of licensed PCAs. The concept of Pest Control Advisors (PCAs) comes from the US, referring to

qualified plant protection experts serving agricultural production. As important human resources for crop health protection in all areas of agricultural production, they provide comprehensive solutions, and help planters increase output and income. In the US, without PCA recommendations, farmers and social agricultural service organizations are not allowed to buy or use pesticides, which has laid a sound foundation for pesticide use and management.

Tao is among the more than 60 senior PCAs who have passed the licensing exam this time. Although he has been in the industry for more than a decade since 2008, he still recognizes the gap between his skills and professional plant protection technicians in developed countries. He said, "Recent years have seen great changes in the agricultural sector. Besides new crop diseases, insect pests and pesticides, new agricultural facilities such as plant protection drones have emerged as well. So, I'd like to continue broadening my horizons to better serve the industry." Tao mentioned that he really likes XAG's Sustainable Farming Programme, which reminds him of beautiful farms in California, farmers in plaid shirts

and jeans, and cheerful country music. The Programme is a new concept agricultural demonstration base project launched by XAG together with Bayer and Rural Taobao in June 2018. It intends to engage partners from the global agricultural science and technology field in providing holistic solutions, building high-performance demonstration farms, and practicing safe, environmental and healthy agricultural management. The ultimate goal is to provide consumers with sufficient, safe, reliable and premium food at affordable prices.

In Tao's imagination, future farms must be equipped with professional technicians who manage the farms and fulfill the duties of PCAs with advanced and comprehensive expertise. With professional skills, scientific thinking, the pursuit of lifelong learning, and the ability to connect with the world, this plant protection specialist at his thirties heralds the promising future of Chinese agriculture. **X**



Meet the Female Drone Pilot in Agriculture: Empowering Rural Community to Tackle Extreme Poverty

On 2019 Alibaba Global Conference on Women and Entrepreneur, a Chinese female drone pilot took the spotlight with her distinctive occupation. Standing on stage in front of hundreds of exceptional women from different disciplines, Sheng Guangning felt a bit tense but passionately shared her stories of how she started business with drones and infused new blood into her rural community.

Drone, when it is mentioned, can always create a stir as a cool stuff. As we dive deep into its real-world applications in various industries, we realise that the prospect of agricultural drone industry is so immense that drone has no longer been a sci-fi fantasy or futuristic technology. For example, an agri-tech company XAG has had over 50,000 plant protection-crop-dusting drones in operation around the globe to protect our food from harmful weeds and pests.

However, drone technology, like many other STEM subjects, has seen a lack of women working in its sector since its emergence. Women and girls are

considered not fit for this job due to the complexity of technology and engineering as well as the harsh working conditions. Despite the gender-based disparity, more young women are surprisingly seen across the fields, chatting with farmers to understand their needs, skilfully operating the drones and helping their counterparts take flight even planning a deployment of the operation team. Sheng Guangning, from Kangbao County of China's Hebei Province, is one of the female representatives who thrives and grows her business in the crop protection industry.

Stumble into the World of Drone and Agriculture

Kangbao used to be a state-level extreme poverty-stricken county in China, facing an aging population with an average age

of 65. Elderly were the main driving force of farming, and when the busy farming season came, pesticide spraying became a huge headache to them. Unable to hire any help even with high pay, these old men had no choice but to painstakingly carry a backpack tank to spray the crops, from morning to dusk. Undoubtedly, this was the least efficient approach that failed to provide timely protection against many pest diseases and therefore often resulted in yield loss. What's worse, they had to endure the scorching sun while being exposed to the risks of chemical poisoning.

As a graduate of agricultural university, Sheng Guangning saw an urgent need of her hometown to change as well as the challenges that went alongside. Deep down she knew that improving farming productivity was one of the necessary ways to cast off poverty for Kangbao, which was long famous for its high-quality produce such as oat, potato, tricholoma and grains. But this place, like many other rural areas, had been left behind in the wave of industry automation, which gave her a dreadful sense of frustration.

Not until 2017, a field visit to Henan Province transformed both her life and that of Kangbao farmers. Sheng learned for the first time that drone could be applied in the world of agriculture to automate the crop spraying process. Drone fleet could sweep across the fields or precisely target at specific sites, saving 30% pesticides and 90% water. Deeply obsessed with this novel technology, she decided to bring it back to help her fellow villagers.

Shortly after that, Sheng signed up the course in Xihua training centre of XAG Academy and took a week to obtain both pilot license and trainer certification. Back in Kangbao, she invested in the equipment and set up her own business, travelling across the county to promote XAG's drone and provide crop spraying service. As a novelty, the drone itself did attract lots of attention from local farmers, but so as suspicion and doubt, with few actually placing orders from Sheng.

At one time, when Sheng travelled 20 kilometres away to provide service, a female customer cancelled the order, because of her husband's objection, right after Sheng arrived. The reason was simple, "I spent my whole life in farming, and I have never seen that such little bit of pesticide could kill the pests."

Facing farmers' distrust and reluctance to take risks, Sheng understood that a good harvest was largely dependent on the effect of crop spraying. But also, a sense of grievances arose, "why they don't believe that drone can cut pesticides and water and save them costs?". To show how drone spraying was of great benefit to them, Sheng made a bold decision, offering limited free services to large farm owners. Primed by smartphone, drone executed its job fully autonomous, supported swarm operation and enabled variable rate spraying on targeted fields.

The advantages of drone spraying were distinctly revealed. With hard-earned approval from villagers, Sheng's drone-backed agribusiness gradually took off. Up to late 2019, her drone spraying services had covered over 2,000 hectares of farmlands on various crops, such as wheat, corn, potato, flax and roses. Appointment needed to be arranged at least one week in advance during the busy season.

Tech Empowers the Greatness of Small

Yet, it took her family quite a time to be supportive of her career. Her mother was worried that Sheng could not find her match because of getting sunburnt. And her father anticipated that Sheng would get a more decent work in the city.

As always, there has been a stigma associated with jobs in agriculture. Young people are fleeing the countryside because working in rural deemed to be "dirty" and without a bright prospect. And when it comes to rural women and girls, despite they play a significant role in securing food and feeding the households, their contributions to agricultural development are largely unrecognised. According to the International Labour Organisation, globally, one in four employed women works in agriculture. While they cultivate lands and care for domestic chores, most of them do not have equal access to resources and their voices are mostly ignored.

The story of Sheng Guangning is one of the exceptions that disrupts the status quo of gender roles in agriculture. Against the current, Sheng takes a shot in agricultural

drone piloting and has been relentlessly committed to her career.



What I have always wanted to do is make agriculture easier for farmers, who could be freed from the tedious, tiring farm work. And therefore, the future countryside would be a better place for all.



Technologies (e.g., drone, AI and IoT) are decentralising the power relationships between urban and rural, as well as male and female. Tech companies such as XAG has been introducing digital infrastructure and automation technology into the remote rural areas. As a result, new professions are born, decent employments are created there, agriculture becomes cooler, and tech advancements are empowering rural women with tools and opportunities to achieve their own worth.

Standing at the cutting edge of drone technology, Sheng Guangning has built a good reputation for her company after countless field operations and training sessions. It has also attracted many rural youths to join her team, which grows from only one person to more than 20.

There need to be more figures of women like Sheng breaking through traditional mindset and mold. And we are very pleased to see that, with technology rapidly developing, progress has been made. An increasing number of women are now reaching out to the for the skies and supporting the female community with their knowledge and skill to end hunger and poverty. **X**

Bayer & XAG

Deepening Corporations in Japan

Content Provided by Bayer CropScience K.K.



Under the urge of modern agriculture revolution, Bayer CropScience K.K. was looking for a true partner to achieve the digital farming realization. Apart from the technology and innovation, there are many parts of the corporate philosophy that can be sympathized between XAG and Bayer CropScience K.K., and the collaboration between the two companies has started.

On November 19, 2018, Bayer CropScience K.K., XAG Co., Ltd., and XAIRCRAFT JAPAN K.K. entered into an exclusive agreement for development of joint business utilizing drones in the Japanese market.

XAG is to be the world's highest-class drone manufacturer specialized in agriculture as well as to tackle various agricultural and environmental issues. In introducing XAG's excellent aircraft quickly to the Japanese market, the knowledge with Bayer of Japanese agriculture and the strength of a supply chain network established nationwide are great competitive advantage, and thus, Bayer is confident that this partnership will accelerate the spread of digital farming in Japan.

■ *Bayer CropScience team in Japan explains XAG's drone uses to local farmers.*

A Successful Establishment

It has been an intense sales preparation period for Bayer CropScience K.K. starting from January to August 2019. Apart from presenting business proposal, Bayer also performed business information sessions and demonstration flights throughout Japan with the cooperation of XAIRCRAFT JAPAN K.K. This facilitated nation-wide networking and preparation for drone sales.

By August 2019, 14 wholesalers across Japan had started selling XAG UAS. The characteristics of P20 drone such as excellent operability and precise spraying performance were explained with knowledges unique to agricultural chemical wholesalers, including the effective use of agricultural chemicals. The unmanned aircraft attracted attention of many farmers, and significant sales growth is expected in the Japanese market.

Previously, airborne spraying by unmanned helicopters was common, and the operation was contract control by a skilled professional operator. Personal drones are just hobbies and are not yet considered practical.

XAG's autonomous navigation is revolutionary, and any farmer who has attended the academy can easily perform the same precise spraying as a conventional professional unmanned helicopter. Additionally, it is very attractive in terms of price. Furthermore, the training and maintenance business is easy to

enter for business partners who are wholesalers of agricultural chemicals, and they can use their extensive knowledge of agricultural chemicals cultivated over many years, this new business is very attractive for them.

Solution-based Agriculture

On the 9th Agri-Week Tokyo held at Makuhari Messe, P30, digital farming, JetSeed and BCS sowing, agricultural chemical packages, and product samples were showcased at the joint booth of XAG Co., Ltd. and Bayer CropScience K.K. The booth attracted highest attention.

The Agri-Week is Japan's largest comprehensive exhibition of agriculture and livestock farming, consisting of 4 exhibitions specialized in the next generation agriculture, agricultural material, livestock farming, and sixth sector industrialization. Approximately 40,000 people involved in agriculture gathered to the 3-day exhibition from all over Japan as well as overseas.

The seminar held on the last day by Mr. Justin Gong, Co-founder and Vice President of XAG Co., Ltd. and Mr. Masahito Niki, Operating Officer and Head of Customer Marketing Japan titled "High Precision Autonomous Drone and Near-future Agriculture Led by Bayer and XAG" was a great success with overflowing people, although it was held in the evening when a large typhoon was approaching.

In the speech, Niki said in a true partnership with Bayer, a biochemistry savvy, and XAG, a specialist in mechanical engineering and IT, through the sharing and co-development of data, which is possible only with an exclusive agreement, to deliver digital farming that is useful to Japanese farmers as quickly as possible. He also stated that realizing more efficient agriculture would contribute to solving urgent issues in agriculture in Japan, such as aging and a lack of successors.

The collaboration between Bayer CropScience and XAG laid the ground for 'solution-based agriculture' in Japan. This advanced digital agriculture approach drew significant interest from the press at the 1st BCS× XAG Business Partner Meeting on October, 2019. The joint approach by Bayer CropScience and XAG has been introduced in more than 40 papers and web media.

"Our mission is to deliver value to farmers. From this point of view, precision application is indispensable. In the past year, we have been conducting demonstration flights and pesticide spray tests throughout Japan," said Dr. Harald Printz, President & Representative Director, CDH Crop Science for Japan. "Finally, have established a highly accurate spraying technology suitable for Japanese agriculture. Not only using digital tools but also firmly grasping the goals that should be achieved. The collaboration with XAG has brought us one step closer to our goals." **X**

Business Development in Latin America:

Many people probably hear that XAG has an overseas market in Australia and Japan. However, those were not the only two areas XAG dive in outside China. In late 2017, the same year as XAG Japan established and the third generation of P series Agricultural UAS has published, some people from the other side of the globe noticed this newly transformed Agriculture Technology Company and wish to seek for collaboration in their region.



How the Other Side of the Globe Embraced AgTech Innovation?



The story can be rewound back to November in 2017. A scaled forestry company in Brazil was expecting an efficient way to control wildly growing weeds that brought negative impact to their plantation. Their China branch in Shanghai eagerly searched for solutions and got to know XAG, which dedicated in agricultural drones with high precision in pesticide and herbicide spraying to protect crops.

Mr Yang Jiaqiang, an employee as well

as one of the partners of this company at that time, was instructed to learn about the business scope of XAG and the detailed functions of its products. After several times of prudential evaluation and in-depth communication with XAG, this Brazilian company was persuaded to adopt XAG's smart agriculture solution to eliminate weeds.

This partnership marked the beginning of XAG's ambitious business expansion plan overseas. Later that

year in December, Mr Ma Zhiqiang, a representative from an Ecuador company called Megadrone came to XAG wishing to become one of the overseas distributors in LATAM (Latin America). As self-stated, he also sought collaboration with other Agricultural UAS companies before, but in the end, XAG was his final option because of the unique drone design, autonomous flying and atomisation spraying.

Strict Tests to Convince Local Farmers

Collaborated with local distributors helps XAG detect more potential needs in that region. In the beginning, the promotion in Latin America had raised certain scepticism regarding the drones'

functionality. Local farmers did not actually believe drones can eliminate pests or weeds better than big scaled tractors at the start, since they're more familiar with the mechanism of those

latter machines. To answer those suspicion, XAG partners along with local plantation owners have put forward a series of demonstrations and tests with the drones.





Instead of acting as an opportunist, XAG looks more like a discreet chess player on the business strategy in LATAM: Stay focus, step cautiously, always adapting.



“It took almost two months to finish all test procedures regarding the effect of spraying.” said Mr. Ma in Ecuador. It was in 2019 when the formal demonstration was carried out among local farmers in order to prove XAG agricultural drones could apply to banana plantation.

Since banana is a kind of tall and big economic crop with broad, heavy leaves,

when densely planted, their leaves would overlap and block the spaces below. This circumstance makes flying operation above bananas plantation quite challenging, because it became hard to guarantee all leaves from a tree could be covered by pesticide evenly.

After a series of strict examinations on spray density and droplet coverage,

XAG’s drones have proved that by downdraft generated under the propellers, liquid is able to spread and attach thoroughly on each leaf of a single plant. “For now, cases of banana plantation owners using drones in flight protection are more than ever before. They are attracted to XAG drone’s outstanding performance as well as its distinctive appearance.” Mr. Ma introduced.

Issues and Solutions in Practical Implementation

Apart from demonstrations, to suit growing demand of drone operators, pilot training is also becoming a significant task for distributors to consider. XAG partners are encouraged to send their engineers to China and obtain standardised training.

Carlos Esteban Angel from LIBELUTECH in Columbia is one of the instructors who have been to XAG China to receive agricultural drone pilot training. He then returned to his country and started spraying operation on rice crops in Tolima, Columbia with his team. Although having gone through full training courses and passed the exams, he found the practical situation in Columbia is quite different from what he has learnt.

“It was not easy to adapt the equipment to this topography, the patches in Colombia has many curves and obstacles. This required extra attention and very skilful operation.” Carlos said, “But we have already trained 3 operators

in my team with good results. In my opinion, the only way to take advantage of and know how to use drones is with the experience and hours of work.”

Same issue occurred on another distributor Eficiente which shows the importance of technical backup. Eficiente serves a local forestry enterprise in Brazil and majors in weeds eradication. Most of their operation scenarios are among hills and required high-frequency operating, components of drones would be easily worn out under such circumstance.

To meet technical demand and resolve time-wasting issue caused by long-distance shipping of replacement parts, sales and global market team from XAG formulated a specific communication mechanism to cope with Eficiente. Excluded time difference, positively react and timely feedback strategies are the key measures abided by the sales team among social platforms like WeChat and WhatsApp. By keeping transparent

communication in problem solving, tight connections between distributors and XAG HQ are maintained.

By years of efforts and sincerity to clients, XAG is able to keep absorbing fresh members during business development, meanwhile retaining benign relationship with most of its initial partners from Latin America, included Mr. Yang and Mr. Ma mentioned above.

Till 2020, XAG has established business in over ten Latin American countries including Brazil, Ecuador, Mexico, Columbia, Guatemala, Chile, Costa Rica, Honduras, Dominica, Peru, Argentina, etc. Steadily and constantly, agritech and smart agriculture just like a seed planted in the soil of Latin America. By its germination, a tech revolution in agriculture will affect millions of choices of local farmers and bring considerable changes to their life in the near future. 

X Story

The Birth of XAG Agricultural Utility Vehicle

From project launch to final release, the development of XAG Agricultural Utility Vehicle (XAUV) took ten months – the same as the conception of a baby. This was achieved by the enthusiasm and dedication of all XAG employees. Through countless nights and days, they explored and experimented, contributing all their wisdom to this new precision agricultural intelligent equipment. They have lived up to the expectations of all new-generation farmers worldwide.

The unveiling of the XAG Agricultural Utility Vehicle (XAUV) signals a new era

of farmland ground protection. From sky to ground, the XAUV and XAG Agricultural Unmanned Aerial System (UAS) have truly realized the unmanned management of agricultural production and plant protection. The roll cage in red, the large-capacity tank in pure white, and the dynamic air jet sprayer... every component was made for precision and efficiency, and every piece of technology was created for smart agriculture.

Precise and Smart as ever

The guiding ideology behind the development of the XAUV is a fast pace and rapid iteration. Everyone has their own ideas and they can implement all

kinds of trials, but in the end, ideas must be transformed into products. All ideas must have reasonable production costs and be feasible to manufacture.

The electronic control modules, control modules and power systems of the XAUV are basically the same as those of the XAG Agricultural UAS, which has saved on R&D time. No matter what kind of products we work on, our designs are always centered on "precision". The air jet sprayer developed for the XAUV has once again provided an industry benchmark for atomization approaches. While pressure nozzles are used in many agricultural machines on the market, such nozzles are easy to block, and cannot accurately adjust flow rates and the size of atomized droplets. This goes against our understanding of precision agriculture.



■ Members of the Robot Platform Department working on the XAUV.

■ Robot Platform Department, Huang Yaolin

On December 19, 2019, the XAG Smart Agriculture System was released, marking the company's transformation from a producer to a provider of platform services. To support the XAUV project, I jumped out of my comfort zone to take on even greater challenges. The coordination between employees of different professions, the communication on design requirements, the process specification of design and procurement. I learned many things through practice, trial and error. I am committed to maximizing the value of every employee and every device. Maximizing the value of every hectare of farmland, every crop, and every piece of data is what XAG hopes to do for farmers.

In the field of smart agriculture, XAG has three missions: building infrastructure for smart agriculture, developing intelligent precision agricultural equipment, and constructing a smart agricultural ecosystem. It is our opportunity, challenge, and responsibility to bring agriculture into a smart era.





■ Agricultural Technology Department, Li Jiesun

Good Products Require Sound Field Studies

In July 2019, targeting precise control, we began to study air jet sprayers. The priority of plant protection spraying is superior atomization performance. Bearing this in mind, we spent two months exploring and verifying desirable atomization approaches. Pressure nozzles is a common method in the industry. However, they are easy to clog and are difficult to use – you have to replace nozzles for particles of different diameters. When it comes to plant protection drones, Rotary Atomization Nozzles are largely used. While offering precise droplet control with a range of 90~550um, Rotary Atomization Nozzles are also superior to pressure nozzles in terms of atomization effect and ease of use. However, they are not suitable for

agricultural unmanned vehicles.

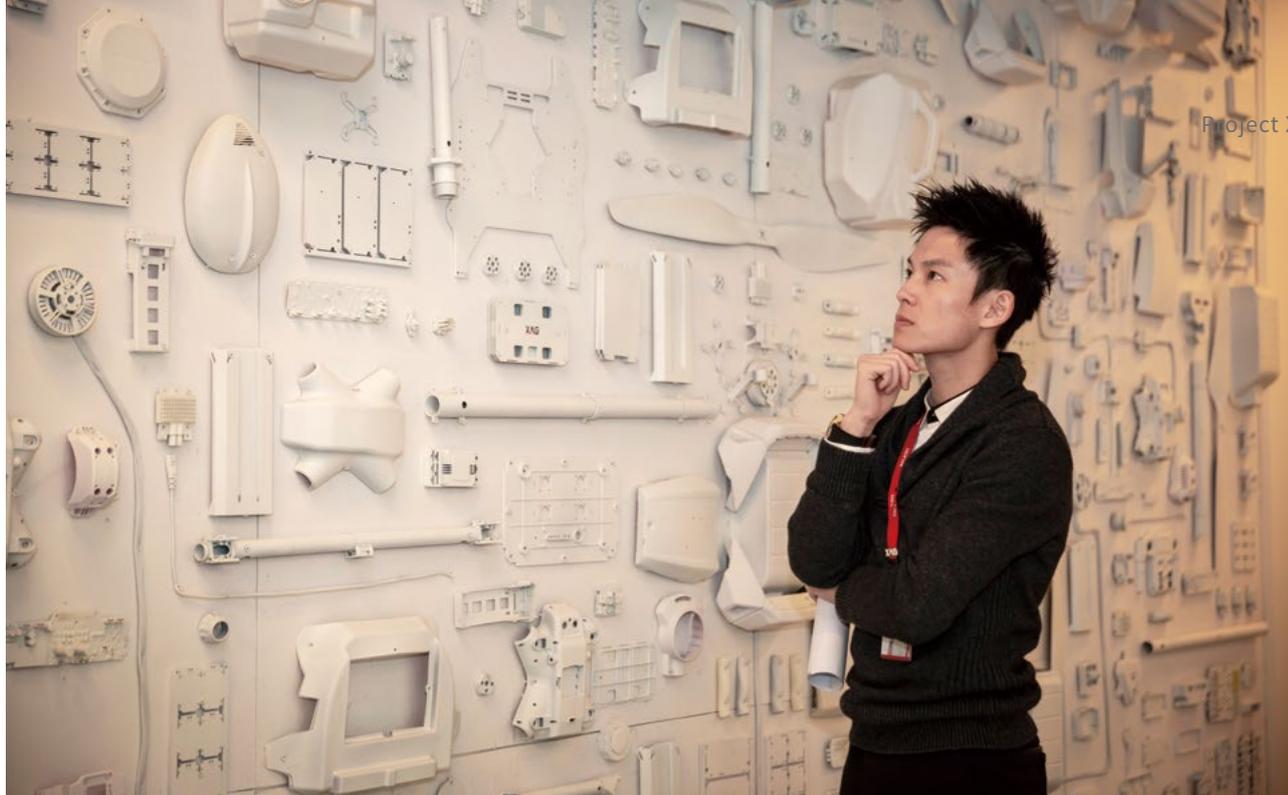
Then, inspired by the cooling fans on public buses and Dyson's hair dryers, we developed air jet sprayers that can perform precise variable spraying. In addition to anti-clogging and high directivity, they also offer precise control over droplet diameter, liquid flow rate, and spray range.

There are two levels within the sprayer. For atomization, a premium high-pressure fan is used, with a static pressure of up to 28 kPa and an outlet wind speed of over 130m/s. The airflow generated by the fan via high-speed rotation atomizes liquid into micron-sized particles. By adjusting motor speed, users can control the size of droplets with ease. For pressurization, there are built-in double fans that counter-rotate to output stable, pressurized airflow. The airflow works to stabilize the mist column when the sprayer switches directions, ensuring that the column accurately reaches the target area. Moreover, it also extends the effective spray width to 12 meters,

supporting precise and efficient ground plant protection.

Details determine your success. Every little mistake or oversight in R&D may cause big trouble for farmland operations. Therefore, whether it is during the exploration of atomization approaches, the selection of motors, or the optimization of the precise control provided by the intelligent electric holder, the tightening of a screw, we insist on pursuing perfection.

We are also aware that working behind closed doors never results in good products. Only 60% of the potential problems of a new product can be detected in a virtual test environment. Only by receiving farmland inspections and listening to farmers' feedback can we really find and solve problems, and perfected products through rapid iteration. Despite the long and arduous R&D process, the sense of achievement and happiness brought by the birth of each product are indescribable.



■ Industrial Design Department, J6

Make Farming Cool with Industrial Design

To me, industrial design is a symphony of sense and sensibility. Any product under development needs to reach a balance among user demands, market positioning, production costs, and processes.

When making a product, one should first consider user needs, that is, what practical problems the product can solve. Then comes the functions we want to provide, to create more use scenarios for the product. At the beginning of the design of the XAUV, we conceived an image of a “racing bull”. Besides practical functions such as plant protection, field inspection, and transportation, the bull also implies robustness and reliability. Equipped with a tank and air jet sprayers, it meets user needs for plant protection by spraying

plain fields, fruit trees, and greenbelts. Furthermore, the vehicle can also be integrated with the XAG Smart Agriculture System for intelligent field patrol and agricultural monitoring, and be used to transport the XAG Agricultural UAS, agricultural machinery and other supplies. These are the demands we have tapped and expanded for users.

After determining user demands, product design is required to effectively communicate brand propositions. The XAUV’s red-white-black palette and oblique parallelogram shape are an inheritance of the “visual hammer” used by previous P-series products, which further enhances the brand identity of XAG.

Finally, the product must convey our brand philosophy and values. Instead of being what-you-see-what-you-get, certain functions of the XAUV can only be known through use, such as its robustness and durability, accuracy and efficiency, scalability, flexible payloads, and multiple

working modes, which are actually consistent with the P-series products.

In addition, we also intend to make the image of agriculture cool through intelligent agricultural equipment such as our XAUV. To most people, farm work is hard and tiring, farming is not a promising occupation, and agricultural equipment is unfashionable, which is far from the truth. Besides tangible functions, we hope our high-tech agricultural products can also improve the image of agriculture. The contradiction between function and beauty, and rationality and sensibility are difficult to balance in the design process. However, this is also where the value of industrial design lies. **X**

2020:



Embracing Change and Welcoming a Brighter Future

Author/ Peng Bin

2019 saw the critical transformation of XAG. In terms of technological innovation, we came up with more thorough and smarter agricultural solutions, earning XAG a leading position in the agricultural sector. In the industry, we further expanded our market and user base, creating much more space for growth. Having transitioned from a start-up to an established company, XAG has developed rules and regulations to clarify job responsibilities and make management more standardized, refined, and mature. In moving towards efficient collaboration, we are prepared to embrace technological changes and innovation.

Changes in Product Logic

In the past year, with the segmentation of the industry, the market for agricultural UAVs has seen further expansion. Originally used only for spraying pesticides, drones are now being applied by more farmers to seeding, fertilizer

spreading, and feeding. Fields other than agriculture welcomed new application scenarios for drones as well. At the same time, technological innovation has lowered the industry threshold, leading to the continued increase in users. The user base, once dominated by service teams, now consists mainly of agricultural machine operators and large planters. More diversified production scenarios and user groups indicate higher requirements for products.

Agricultural intelligence is more than drones. Various types of agricultural technology products are required to fill the gap that aerial devices cannot reach. In December, XAG unveiled a more complete product ecosystem. New products such as the Agricultural Utility Vehicle, AutoPilot Console, and Smart Agriculture System were released as part of the company's holistic smart agriculture solutions. With air-ground precision operating equipment, intelligent software management, and an IoT sharing platform, XAG has transformed from a producer of agricultural drones to a

provider of smart agriculture services.

XAG's Positioning and Advantages

Harnessing smart agricultural technology, we can restructure and remodel backward processes in agricultural production, and free production methods from crudeness, blindness, and the sole pursuit of efficiency and output value. We can divide the mission of pivoting towards intelligent, precise and sustainable agriculture into three parts.

First, building digital agriculture infrastructure. By setting up RTK high-precision navigation bases and utilizing drone mapping, we can establish a complete farmland navigation network to provide standardized services for farmers worldwide. In the future, global agricultural robots and unmanned facilities will be able to perform autonomous operations via XAG's high-precision navigation networks.

Second, developing precision agricultural intelligent equipment. With technology and tools such as UAS, unmanned vehicles, and precision variable spraying, we can eliminate conventional production methods that are blind, crude, and inefficient, to lower labor costs and product higher quality products.

Third, constructing a smart agricultural ecosystem. Based on digital technology, precision devices, IoT, and AI, we offer targeted agricultural management from perception, diagnosis, decision-making, to control. In this way, agricultural production can grow with higher precision, automation, and intelligence, to reach a balance between yield and quality.

Through 12 years of exploration and innovation, XAG has developed four competitive edges that will drive future growth. 1) Strong R&D capabilities. It is precisely with its expertise in flight control, automatic driving, and precise operation that XAG has defined the industry of plant protection drones. After years of technological upgrades, the company has established a strong profile in six core areas – robot control, precision release, high-precision RTK navigation, farmland mapping, cloud computing and agricultural AI, as well as teaching and research. They enable XAG to lead the development of global smart agriculture. 2) Business scale. XAG has already become the largest player in the field of agricultural sci-tech and smart agriculture that provides comprehensive production solutions for farmers. Our air-ground products – drones and unmanned vehicles, IoT sharing platform, and production management system are helping manage farms spanning millions of hectares. 3) An ecosystem with increasing scale effects. XAG is committed to expanding the ecology of smart agricultural products and developing new precision agricultural devices. All our products can

be seamlessly connected to a complete agricultural ecosystem. 4) A nationwide channel network. XAG has now reached major agricultural production areas and 1,150 key agricultural counties across China, and plans to further strengthen its promotion and influence in 2020.

Balance between Innovation and Efficiency

The ever changing market environment has put forward new requirements for businesses. Looking forward to 2020, XAG will come to a new stage of development. By establishing more thorough regulations on corporate culture and job duties, and finding a new balance between innovation and efficiency, we can better adapt to the new market environment.

In the new system, we are prepared to make the following changes:

1. Develop more rules and regulations to support teamwork. The strength and honor of teams take precedence over those of individuals.
2. Improve organizational structure and job responsibilities. Functions are divided with clear boundaries, coupled with clear work targets and performance evaluation methodologies. It is necessary to ensure that rewards and penalties are well-founded and employee development is well-guided.
3. Attract more specialized and professional talent. In the new development stage, talent also needs to be upgraded. While training existing employees and recruiting new ones, it is necessary to focus on both measurable and immeasurable professional capabilities.

4. Clarify strategic positioning and corporate culture (mission, vision, values). It is important that all employees understand XAG culture, and all partners and users know about the vision of XAG. Only with a clear vision and clear goals can we overcome difficulties, eliminate prejudices, and work together for the future.

Constant pursuit of the balance between efficiency and innovation is key to coping with changes as well. XAG has always stayed true to innovation, which allows team members to speak freely, put ideas into practice, and even become leaders.

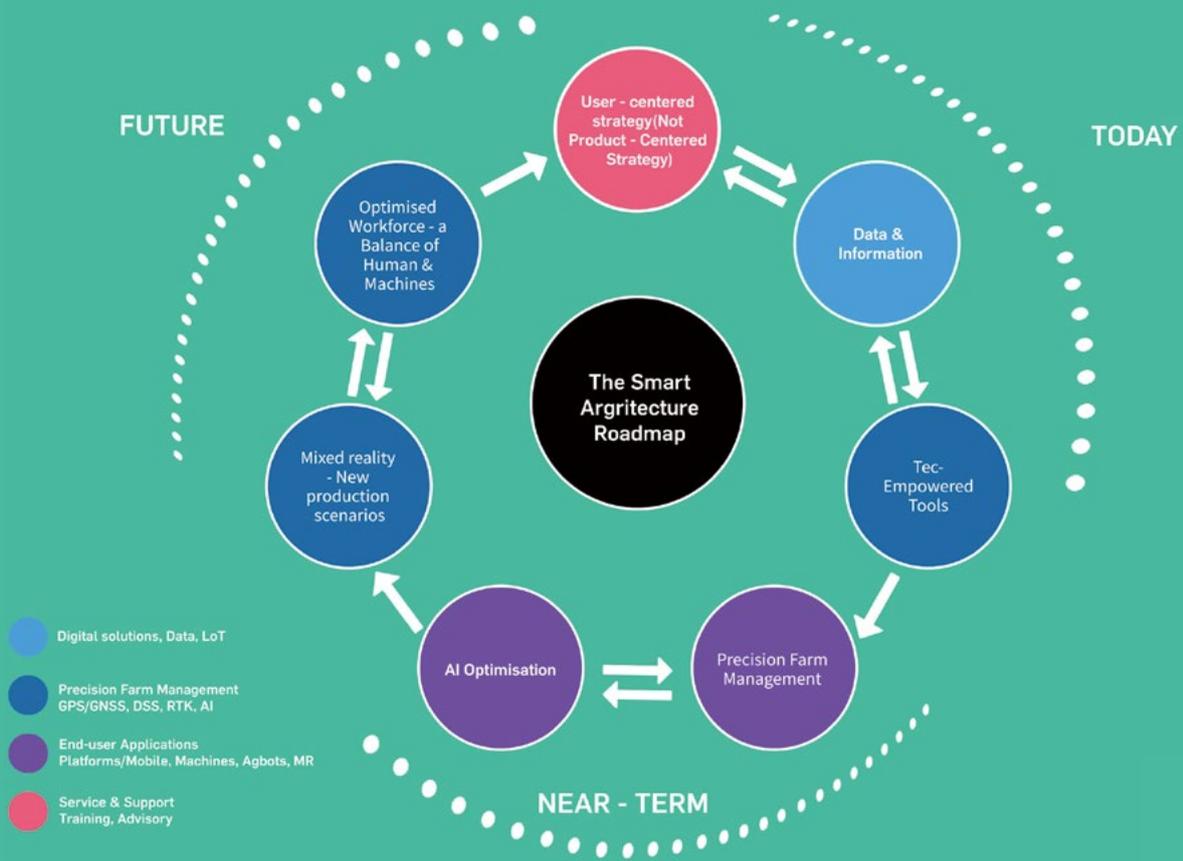
The drive to innovate has helped XAG go through four business cycles as a start-up, and grow into a company with over a thousand employees. However, rapid expansion and blind pursuit of innovation may lead to reduced efficiency. Innovation brings vitality, but every idea or trial has two sides – surprises and mistakes. On the other hand, efficiency is often realized by unified instructions and higher centralization, which allows teams to take action and achieve goals with agility.

Looking forward, XAG should avoid being a company where either efficiency or innovation outweighs the other. They are the two ends of a balance – sole pursuit of innovation will definitely lead to inefficiency, and vice versa. Only by having a clearly defined vision and clear goals can we better address challenges and seize opportunities.

In the new year, embrace change and welcome a brighter future. **X**

The Smart Agriculture Roadmap:

Heralding the Era of Agriculture 4.0



5G revolution, robotic labour, technology cross-border, disintermediated supply chain and increasing demand for transparency, are five important emerging trends that set to radically reshape the future of agriculture.

The global strategy consultancy group CLEAR has allied with XAG, Ant Financial and Huawei to publish a Smart Agriculture POV Report 2020. This report identifies the biggest emerging opportunities with the advent of smart agriculture and delivers strategies on what manufacturers and service providers need to do to create commercially successful propositions that enable the agriculture industry to continuously feed the world.

As the world's population is expected to hit 10 billion by 2050, farms will need to increase their output by 70% to meet future demand for food. At the same time, urbanisation is accelerating loss of the labour force in rural areas, and climate change is creating major new challenges for productivity and yields. Luckily, the application of exciting new technologies is heralding the start of a new revolution in food production. Recent and emerging

technological developments such as 5G, IoT, drones and AI are accelerating changes across the agriculture value chain. Variously described as the 'digital agricultural revolution' and 'Agriculture 4.0', this transformation has the potential to revolutionise the way we produce food and help us meet these future challenges head on.

Emerging trends & technologies

A number of trends and emerging technologies are set to radically re-shape the future of agriculture - improving efficiency, output and profitability.

1

The 5G revolution

With a higher peak data rate, lower latency and massive capability, 5G will immensely improve connectivity between stakeholders, users, objects and data. Taken together with developments in IoT, cloud computing, VR and AI, this will enable greater precision of activities within the food production value chain. Better decision-making is enabled via the advent of new 'mixed reality' production tools.

2

Robotics

Advancements in robotics will directly address the challenge of labour drain and further unlock productivity potential. AgBots (agricultural robots) are already being deployed to perform repetitive and standardized tasks on farms. There's a huge potential for AgBots to create even more value in future – learning to improve their own productivity via AI algorithms, taking on increasingly

complex tasks and, ultimately, being able to interact with users and help them make more informed decisions that increase yields and profitability.

3

Technology cross-border

As arable land becomes a scarcer resource, we'll increasingly harness the sky above us to better utilise the available space. Next generation drones with advanced navigational technology and AI will enable us to harness the potential of vertical farming, even in large cities - helping farmers maximise the productivity of their land by making imaging, monitoring, planting and spraying from the air accessible and cost-effective for all.

4

Disintermediated supply chain

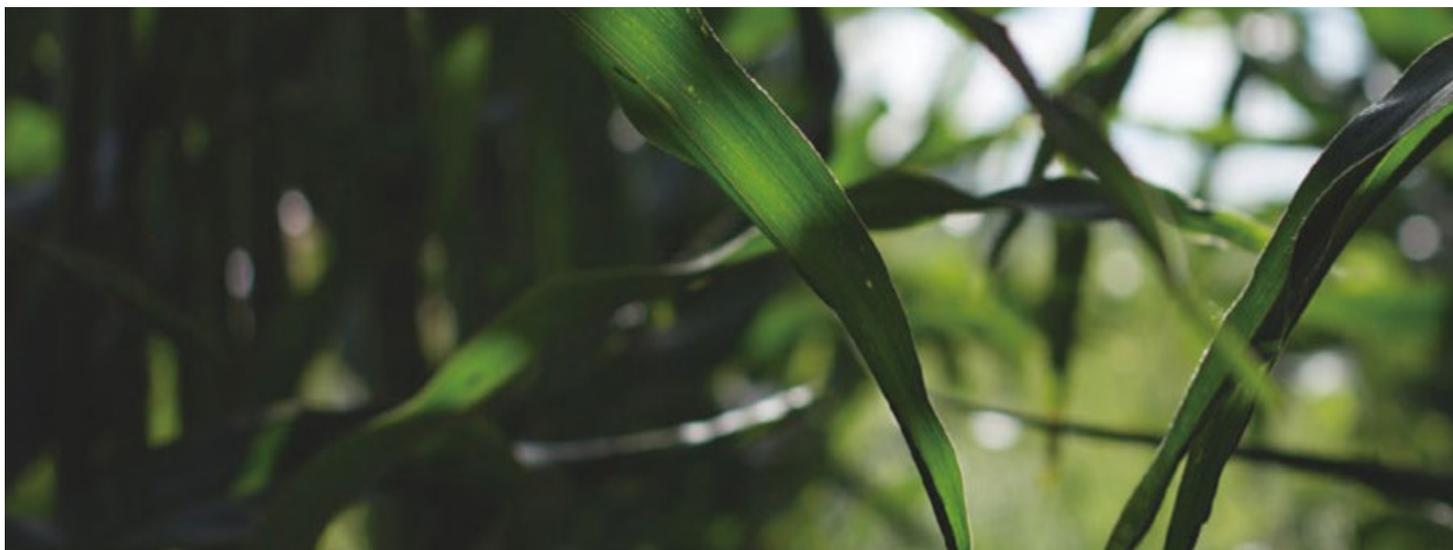
With 5G enabling much greater connectivity

between diverse stakeholders, end-users (especially farmers) will demand much more efficiency and transparency within the agricultural supply chain. From input management, financing and primary production to aggregation, processing and distribution, farmers will look for ways to reduce their reliance on distributors and intermediaries, capturing a fairer share of the value they create.

5

A new era of transparency

Consumers will increasingly demand firm evidence from retailers and manufacturers to back up the claims they make about sustainability, organic, food miles, etc. Digitalisation along with blockchain technology will be deployed to enhance the visibility, transparency and traceability of the supply chain - not only enabling brands to deliver food security but also being deployed directly to ensure credibility of direct-to-customer claims. **X**



The Smart Agriculture Roadmap

Taken together and deployed effectively – these emerging trends and technologies have the potential to usher in a new ‘golden age’ of Smart Agriculture. Here’s our roadmap for building and delivering the key elements of a Smart Agriculture strategy and eco-system.

Within this ecosystem, labour-intensive farm activities are automated, while stakeholders and decision makers across the value chain are more connected with one another. Information and data, physical products, services

and touchpoint experiences will be united as one integrated solution that solves users’ needs. Data will be gathered in the ecosystem from disparate sources, breaking down data silos and building one convergent data store. This will empower at-scale machine learning and leads to AI optimisation of a precision farm management system. With an optimised workforce, Smart Agriculture will enable major gains in productivity, efficiency and profitability.

And whilst most existing solutions in

this space are targeting industrial-scale agricultural producers, there will be significant opportunity to deploy Smart Agriculture to create value for smaller scale producers in the future. Whilst larger producers will continue to be the early adopters in this space, if manufacturers are able to create the right propositions for them, we believe small-scale farms are also ready to respond to the changes brought by natural and socioeconomic circumstances, and the opportunities afforded by the introduction of machines and technologies.

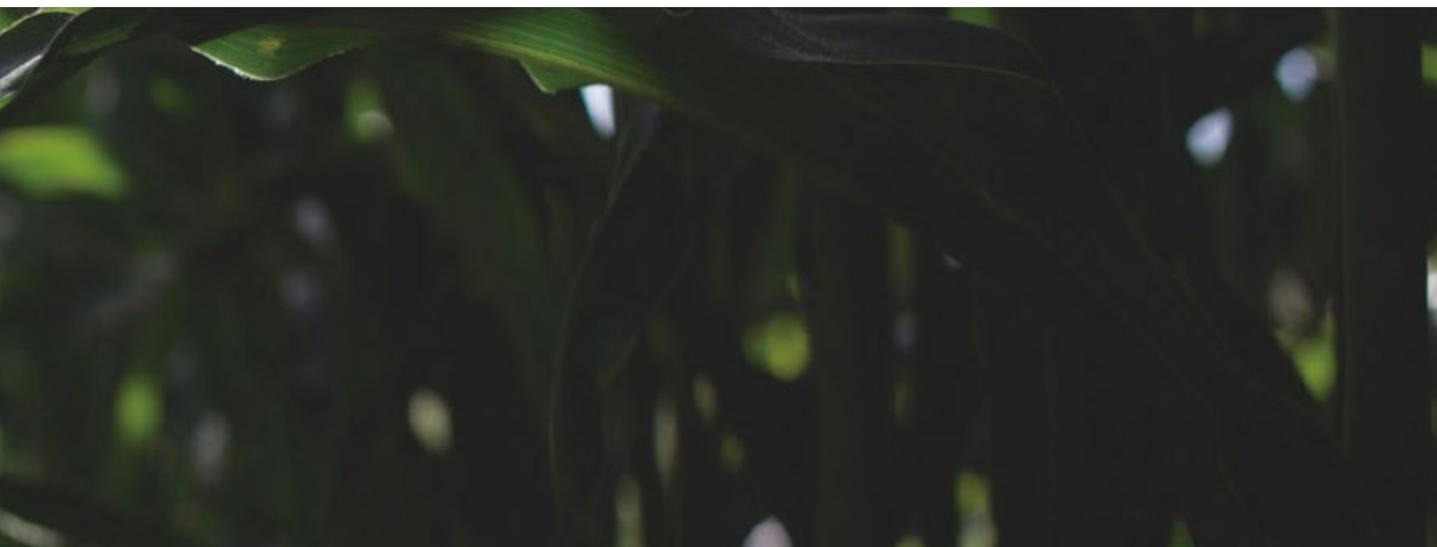
Unleashing the potential of Smart Agriculture for all

Whilst the future potential offered by Smart Agriculture is hugely exciting, unleashing this potential won’t be a walk in the park. It won’t be enough simply to launch new technical features and functionality to the market. To truly unlock the opportunity, manufacturers

will need to evolve beyond a purely ‘engineering mindset’ – and work out how to deploy the available technologies into Smart Agriculture service solutions that meet the needs, pain points & motivations of different types of stakeholder within the food

production value chain better than current alternatives.

Only by thinking in this way – and taking a human-centred approach - can we unleash the true potential of Smart Agriculture. Achieving this requires a



new mindset from manufacturers – one that understands and embraces user needs as well as technical possibilities.

They need to have a detailed understanding of the different types of user out there (=segmentation) as well as the different needs and pain points across the user journey for each type of user (=journey

mapping) to work out how Smart Agriculture can help to solve their problem.

Segmentation is beneficial to help manufacturers map the market in terms of the different target user groups and needs that exist, as well as identifying the biggest opportunities against which to develop Smart Agriculture solutions.

It also brings clarity as to which type of farmers are the most attractive target audience, starting by understanding different types and sizes of farms but also more importantly individual farmer characteristics and behaviour such as attitudes and motivations.

Who to watch in this space

There are a few key players fulfilling the vision of Smart Agriculture and seizing these strategic opportunities. If they are able to successfully deploy human-centred thinking and launch breakthrough solutions, then they may well lead the Smart Agriculture revolution in the coming years.

XAG, headquartered in China, is one of the few companies considering farmers' needs when developing their solutions. Their new prototype of a Smart Agriculture system – XSAS – integrates data analytics, IoT, precision farming and

AI optimisation to help farmers and farm owners optimise inputs and maximise productivity and profitability.

12 years ago, XAG opened up the drone market with stable flight control technology. 6 years ago, it met the needs of precision farming with crop-dusting drones. 4 years ago, it was found that only fully autonomous plant protection drone operation can provide high-efficiency and standardised agricultural services. Mapping fields and setting up RTK high-precision navigation network became part of XAG's digital agriculture strategy.

Justin Gong, Co-founder and Vice President of XAG, said, “along the journey of plant protection, we have developed agriculture IoT system, farmland mapping/remote sensing UAS, intelligent granule spreader, agri AUV, agri-autopilot console and smart agriculture system—with farming production/operation/equipment/resource management all in one. In the future, we hope to build a four-dimensional agriculture AI through accessing multiple data sources, to truly lead agriculture to the future.” **X**

XAG 2019 Highlights

2019 witnessed the limitless expansion of digital agriculture, the burgeoning growth of precision agriculture, and irresistible future of smart agriculture.

2/22

Delivery of first batch 2019 Plant Protection UAS

Apr

Fight Against the Fall ArmyWorm

Actively responded to the call of the Ministry of Agriculture and Rural Areas, XAG with its partners started to carry out emergency prevention and control of the fall armyworm in Heng County, Guangxi province as a beginning. Same in Zambia, Zhang Xu also put XAG's plant protection UAS into practice, winning high praise from local farmland owners.

4/01

XAG's 12th Anniversary

Growing from a small team of several people just 12 years ago, to a group of more than 1,400 people today, XAG have committed to continuous innovation. Technologies has been applied to the practice of more than 5% of farmland in China, digitalising more than 20 million hectares, and rearing agricultural AI is to be fulfilled. A new agriculture dream.

4/01

New Domain Name, XA.COM

4/25

Launched JetSeed in High Altitude Areas

XAG launched its smart UAS granule spreading system JetSeed in Ruogai Grassland, Hongyuan County, Sichuan Province, which has an altitude of 3,600 meters. It not only accelerated the restoration of grassland ecology, but also helped local herders to increase income, achieving both ecological protection and poverty alleviation.



5/29

Release of the First CSR Report

Along with participating the Responsible Business Forum on Climate Innovation, XAG has published its first Corporate Social Responsibility Report to highlight the contributions it made to improve sustainable development in social, economic and environmental context for the past five years.

6/06

UN AI Summit

Hosted by the United Nations, the 3rd Global Summit on Artificial Intelligence

for the Benefit of Mankind was held in Geneva, Switzerland. Co-founder, Justin Gong, shared with conference attendees on how XAG used AI and data to grant credit to small farmers, empowering them and improving their survival and development capabilities, while at the same time bringing about profound changes to agricultural production and people's lives.

7/01

Davos Speech by Justin Gong

The 2019 Summer Davos Forum was held in Dalian. Co-founder, Justin Gong, delivered a speech on the theme of "The Future Frontier of Food: Scaling Agritech", sharing the factors behind the rapid development of China's smart agriculture, and its long-term impact on world economic development.

8/16

Fruit Tree Plant Protection Experiment with Bayer

XAG was invited by Bayer to participate in technical discussion on the UAS plant protection of fruit tree. At the seminar, co-founder of XAG, Justin Gong detailed the latest fruit tree mode to experts at home and abroad, including how to achieve effective drug dosing of fruit trees by drone spraying, 3D mapping,

AI recognition, high-precision satellite navigation and variable-rate spraying.

8/29

Rice Direct Seeding Achieved High Yield

Sep

Take off for the Harvest

In the fall harvest of this year, nearly 3,000 UASs were convened, together with over 1,500 local ones, to support Xinjiang and complete defoliant spraying on more than 0.8 million hectares of cotton fields for 382,353 local farmers, equivalent to 65% of the cotton harvested area in Xinjiang, with a total operating area of approximately 1.74 million hectare/times. Cotton output was expected to increase by about 413,600 tons, creating over RMB 3.108 million of income for the local cotton farmers, based on the purchase price of RMB 7.20 per kilogram.



9/11

UAS Operations Covered 20 Million Hectares

10/15

Partnering with Yuan Longping's Team

At the 2nd Smart Agriculture International

(Qingdao) Summit Forum, XAG and Qingdao Jiutian Smart Agriculture Group signed a strategic cooperation agreement. The two parties stated that they would focus on improvement of saline soil and smart agricultural projects, carrying out the joint cooperation of saline-resistant rice cultivation, production data sharing, and AI technology demonstration and verification.

10/28

XAAC 2019

Thousands of guests from China, Japan, Canada, Korea, Australia, Africa and other countries and regions, including professional farmers, international agricultural experts, presidents of multinational corporations, scientific research institutions, and agricultural technology enthusiasts, attended the conference with the theme of "Empowering Global Next-Gen Farmers". They offered insights on the developmental stage and future of smart agriculture from a global perspective, and the impact of science and technology on the global agricultural economy.

11/10

Participation in the Hannover Agritechnica 2019

XAG, for the first time, showcased its smart agriculture solutions to an international audience of 152 countries at Agritechnica 2019, the world's largest agricultural technology trade fair held in Hanover, Germany from 10-16 November.

11/13

Received 'Best Innovation in Precision Farming Technology' of Crop Science Awards

11/25

Launched Joint Development of Project Vesper with Airbus

12/19

2020 Smart Agriculture Technology Conference (SAC)

Smart Agriculture Conference (SAC 2020), hosted by XAG, co-organised by Chinese National Precision Agricultural Aviation Centre and partnered with Alipay, was held in Beijing. At the conference, XAG released R80, Smart Agricultural System, and AutoPilot Console, as well as a Smart Agriculture Report. The report defined and clarified the concepts of digital agriculture, precision agriculture and smart agriculture for the first time.





PLANT THE SEED RE-GREEN THE EARTH

JETSEED™ Granule Spreading System

Drone spreading grass seeds to restore the degraded grassland at an altitude of 3,600 metres in Sichuan, China.