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中德农业中心
Deutsch-Chinesisches Agrarzentrum



Sino-German Agricultural Centre
(DCZ)
中德农业中心



Sino-German Agricultural and Food
Update
中德农业与食品通讯



No. 11 June – July 2020



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Foreword

Dear partners and friends of the Sino-German Agricultural Centre,

Smart agriculture is not only the cover story in this edition of our newsletter, but it also is this year's focus of the Agricultural Policy Dialogue in our project. The importance of the subject is evident in German as well as the Chinese policy documents. (Also see the news on the "*Circular on Conducting National Rural Digitalization Pilot Work*" in our Good to Know section.) We are glad that a team of Chinese experts of the Chinese Academy of Agricultural Sciences provided us with an overview of the "Development of Smart Agriculture in China" in this edition of the newsletter.

More information and DCZ outputs on this topic of Smart Agriculture can be expected later this year – "stay tuned".

Although there still seems to be a long way to return to normality, the DCZ as well as other German-Chinese agricultural cooperation projects have been very active and were able to conduct online events and produce outputs which you will find in the respective sections of the newsletter – and more also on our DCZ website and LinkedIn account.

Planning of events is difficult in these times, but the next edition of the DCZ newsletter is something you can count on.

With best wishes



Dr. Jürgen Ritter
Managing Director
Sino-German Agricultural Centre (DCZ)

Cover Story

Development of Smart Agriculture in China

Wu Wenbin, Song Qian, Yu Qiangyi, Shi Yun

(Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences)

As humankind is entering the digital era, smart agriculture, which is regarded as the future development trend of agriculture, currently gains global attention. Compared with developed countries, China's research on agricultural information technology started relatively late. But in recent years, with the gradual maturity of information technology, agricultural machinery and agronomy theory, agricultural informatization has maintained a sound momentum of growth, and a new agricultural system has been formed.

Stages of Agricultural Informatization in China

The first stage: agriculture computerization (1970s). At this stage, remote sensing was used to monitor crops and estimate production. After 1978, China gradually carried out large-scale remote sensing research and experiments for yield estimation of major crops. This included for example the establishment of a remote sensing-meteorological system for winter wheat yield estimation in the Beijing-Tianjin area, a remote sensing system for wheat yield estimation in Jiaxing City, Zhejiang Province, and a dynamic monitoring system of forage-livestock balance in northern China. Out of these, China's agricultural scientific statistical calculation and agricultural data processing (1.0 era) emerged.

The second stage: agricultural systems modeling (from the 1980s to the 1990s). The expert system is an important part of agricul-

tural information technology and the earliest field in China's agricultural informatization. It has achieved great results and is widely used in fertilization, irrigation, plant protection, soil and water conservation and other fields. In 1983, an expert consultation system for wheat fertilization in vertisols (locally referred to as Shajiang black soil) was developed. In 1987, an expert system for crop pest and disease diagnosis was set up by Beijing Agricultural University. In the 1990s, an expert system for earth dam accident diagnosis was designed by Hebei Agricultural University. At this stage, experts' knowledge and experience was used for computer simulation. Against this backdrop, China's digital agricultural model and agricultural expert system (2.0 era) were born.

The third stage: digitization and precision agriculture (from 2000 to 2010 in the 21st century). At this stage, geographic information system (GIS) and other technologies were used to analyze the spatial variability of soil nutrients in the black soil zone of Jilin Province, and a spatial variability map of soil nutrients was made. Daxijiang farm in Heilongjiang Province for example introduced variable ratio spray machines with GPS-based automatic driving devices and Case IH2366 harvesters with a production monitoring system from the United States. Large-scale precision spray equipment, variable rate fertilizer applicator and satellite guidance systems for agricultural machinery developed in China were applied and demonstrated in Xinjiang Uygur Autonomous Region, Heilongjiang Province and other places. In Beijing the Precision Agriculture Demonstration Project was launched. This project which contributed greatly to improvements in collecting information about soil and crops, and application rate of fertilizers marked the step of China's agricultural informatization into digital agriculture and precision agriculture (3.0 era).

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The fourth stage: smart agriculture (2011-present). At this stage, big data agricultural science developed out of theoretical science, experimental science and computational science to a data-intensive knowledge discovery. In 2014, an expert system for greenhouse vegetable pest and disease diagnosis and management was invented. Since then, high-level agricultural expert systems for fertilization, crop pest and disease diagnosis and agricultural mechanization of production have been developed. The Internet of Things (IoT), big data, artificial intelligence technology, intelligent equipment, and intelligent robots have been applied to the whole industrial chain including agricultural production, processing, operating, management and service. And finally, smart agriculture featured by automation, precision, digitization and intelligence (4.0 era) is being realized.

Policy Considerations for Smart Agriculture

13th Five-Year Plan (2016-2020) integrated the development of smart agriculture into the overall plan for national and economic development. More specified plans such as the *13th Five-Year Plan for National Science, Technology and Innovation (2016-2020)* and the *National Agricultural Modernization Plan (2016-2020)* as well included the development of smart agriculture. Relevant for the development of smart agriculture is also *The report of the 19th CPC National Congress (2017)* that proposed the development of a digital economy and building a digital China. In the same year, the State Council issued the *New Generation Artificial Intelligence Development Plan (2017)*, which put forward the guiding principle, strategic objectives, key tasks and safeguards for the development of China's new generation of AI in 2030. In the following years the CPC Central Committee also addressed smart agriculture in the annual *No. 1 Documents*. For example, the No. 1

Document in 2017 made it clear that an agricultural supply-side structural reform will be the main line and furthermore, pushed forward the experiment and demonstration of agricultural IoT and smart agricultural equipment. The 2018 *No. 1 Document*, which outlined the strategy of rural revitalization, clearly stated that we must vigorously develop digital agriculture, implement smart agriculture, forestry and water conservancy projects, and promote the experimental and demonstration projects for agricultural IoT and the application of remote sensing technology. Consequently, *The Rural Revitalization Strategic Plan (2018-2022)* requires the development and implementation of the outline for digital agriculture and rural planning. In addition, the Ministry of Agriculture and Rural Affairs (MARA), together with relevant departments, formulated and issued a series of documents including the *13th Five-Year National Agricultural and Rural Informatization Development Plan*, the *Three-Year Action Plan on Internet Plus Modern Agriculture*, the *Action Plan on Promoting Agricultural E-commerce Development*, and *Implementation Opinions on Promoting the Development of Big Data in Agriculture and Rural Areas*. Especially since 2019, MARA intensified support for the development of digital agriculture and digitization of rural areas. In May 2019, the General Office of the CPC Central Committee and the State Council issued the *Outline of Digital Rural Development Strategy*, which clearly defines digital villages as the strategic direction of rural revitalization. In July 2019, the Central Internet Information Office, MARA and relevant departments jointly formulated and issued the *Division Plan of Major Tasks for the Outline of Digital Rural Development Strategy*, which clarified the division of responsibilities. In December 2019, MARA and the Office of the Central Cyberspace Affairs Commission issued the *Digital Agriculture and Rural Development Plan*. In recent

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Fig. 1: Satellite-Airborne-Ground Integrated (SAGI) Sensing System by CAAS (source: CAAS)

months various departments in various regions have issued a series of regional development plans, implementation plans and supporting policies. For example Heilongjiang, Jilin, Shandong, Guangxi, Fujian and other provinces have already initiated the preparation of digital rural planning, clarified the development direction of digital agriculture and rural areas, and planned some major projects.

Current Practices of Smart Agriculture

Chinese governments at all levels, enterprises and scientific research institutes have laid down intelligent solutions with digital information technology for the whole process of agricultural production including production, processing, marketing and circulation when pursuing the practice of smart agriculture.

For data collection, the Institute for Agricultural Resource and Regional Planning (IARRP) of the Chinese Academy of Agricultural Sciences (CAAS) has developed a big data platform for integrated farming by using satellite remote sensing technology, unmanned aerial vehicles and ground sample survey equipment, as well as systems such as IoT, to collect farmland, environment, crops and field management parameters.

For production and processing the Sinochem Group uses crop models to monitor crop growth and health status, analyze soil fertility, and propose precise fertilization programs. Regarding precision irrigation, the Sinochem Group developed a rice paddy irrigation system and the alfalfa pointer-type irrigation system based on the equipment of IoT to make use of intelligent and remote control. Following Netease's pig farm and Jingdong's chicken farm, Tencent established an AI eco goose factory, using AI technology to experiment, goose face recognition and new breeding technologies.

For marketing and distribution, the e-commerce platform Jingdong analyzed consumer preferences by utilizing big data, guided the production and brand building of agricultural products, and promoted the traceability system of agricultural products based on blockchain. The platform Alibaba started businesses such as Freshipo and rural Taobao. Alibaba's online businesses of agricultural products in 2019 exceeded 200 billion RMB.

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Fig.2: Industries involved in smart agriculture

Model Park for Smart Agriculture Technology: Wujiang National Modern Agriculture Demonstration Zone

Since 2014, the *Wujiang National Modern Agriculture Demonstration Zone* has successively built a number of information systems and platforms, such as the IoT Equipment Remote Control Technology of Suzhou Shenyuan Bio-Tech Co. Ltd., the IoT Equipment Remote Control Technology of Suzhou Sangang Agricultural Products Distribution Co. Ltd., the IoT based running water fish culture of Shenhong IoT Technology Co., Ltd., and an agricultural e-commerce system, which have been widely used in rice cultivation, aquatic food production, horticultural crop cultivation, quality control, logistics and distribution. Among them, the IoT control system for precision agriculture has reduced the input of manpower and material resources, with the average yield of rice increased by 7-10 percent. Shenhong's IoT based running water fish culture has improved the output rate and economic benefits per unit area and effectively improved the quality of commercial fish. The IoT Equipment Remote Control Technology of Suzhou

Sangang Agricultural Products Distribution Co. Ltd., implements full-process monitoring and quality traceability for the production, processing, distribution, and logistics of agricultural products, and realizes the whole process supervision of each product from source to table.

Model for Fresh Food Production and Marketing Docking: Fresh Service

Freshservice established the first vegetable network shopping platform in China by introducing B2C (Business to Consumer) and O2O (online to offline) e-commerce. It establishes the C2B2F model (customer-enterprise-farmland or factory), expands the community micro vegetable market, enriches the procurement channels of traditional vegetable farms, and sets up intelligent refrigerators for agricultural products in communities to directly connect agricultural production bases and community residents, effectively guaranteeing the freshness and safety of agricultural products, and solving problems with the last-mile delivery of fresh food. It has established community micro vegetable markets in more than 1,000 communities in Suzhou, Shanghai,

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Fig.3: Freshservice vegetable network shopping platform (Illustration: CAAS)

Beijing and Wuxi, providing fresh food delivery services to 820,000 households.

Model for Agricultural Product Marketing Network: Dongshan Agricultural E-commerce Park

Dongshan Town has invested more than 30 million RMB to build a 20,000-square-meter agricultural e-commerce park. The park provides product brands, standards, packaging, training and other services for e-commerce farmers, logistics, warehousing, cold chain distribution and other platforms for distributors, and offline experience stores for consumers. E-businesses of agricultural products have grown to a current number of 572 with an output value reaching 130 million RMB. The e-commerce industrial park has become an important platform for Dongshan Town to develop Internet Plus agriculture and last-

mile delivery of fresh food, which can help to increase farmers' income.

Model for Precision Cultivation of Rice and Wheat: Tongli National Modern Agriculture Demonstration Zone

The Tongli National Modern Agriculture Demonstration Zone uses satellite remote sensing, drones (UAV unmanned aerial vehicle), farmland sensor networks and portable crop monitors to get real-time crop growth information (leaf nitrogen, leaf nitrogen accumulation, area index and biomass) and farmland environmental information (canopy temperature, humidity, CO₂ concentration, soil temperature and water content), as well as mobile phones or computer terminals to quantitatively diagnose crop growth and dynamically adjust the crop topdressing program based on the intelligent management



Fig. 4: Car with UAV sensing system (photo: CAAS)

service platform for rice and wheat to provide quantitative management suggestions for large farms. The whole zone has an extended smart management area of nearly 2,500 ha, with an average nitrogen saving of 5.2 percent and an increase output of about 5 percent.

Model for Smart Vegetable Cultivation: Dongbang integrated management platform

Dongbang Town, China Telecom and Nanjing University of Science and Technology jointly developed an integrated management platform for intelligent vegetable cultivation. The platform installs an agricultural sensor system and uses GIS for data collection, identification, positioning, analysis, presentation and big data analysis, effectively controls illumination, temperature, humidity, carbon dioxide, soil moisture, etc. to achieve precise management for the whole process of crop breeding, production, and reproduction. This has greatly improved the survival rate of vegetable seedlings and effectively solved problems during the cultivation phase such as unreasonable planting structure, excessive application of fertilizers and pesticides, and difficult management of irrigation pumping stations.



Fig. 5: IOT for ricefields (photo: CAAS)

Model for Traceability of Aquatic Product Quality: Yangcheng Lake

The *Yangcheng Lake Modern Agricultural Industrial Park* established a quality traceability system for aquatic products that integrates intelligent management, quality traceability, intelligent control, and remote diagnosis and treatment. In addition, it runs a mobile phone message platform on aquaculture technology which covers large aquaculture households, cooperatives, large-scale bases and the industrial park to release production information for technical guidance and disease prevention. The park also features an independent water intake, a drainage system and wastewater disinfection and purification areas, and has installed online water quality monitoring and crop disease remote diagnosis systems. Thus, information management for the whole process of fishery farming is realized, and the per capita income in the demonstration area increased by nearly 30 percent compared with traditional farming households. On this basis, the circulating water aquaculture mode is extensively adopted and ecological purification is achieved through aquatic plants, which not only effectively reduces ammonia nitrogen, total nitrogen and total phosphorus in aquaculture wastewater and improves the quality and

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yield of fish farming, but also slows down the eutrophication of the Yangcheng Lake.

Future Prospects

Although China's research has seen significant progress, compared with the requirements of digital China and for a smart society, the development of smart agriculture is still lagging behind and still faces many problems and challenges, such as a weak infrastructure, a fragmentary data resource system, the lack of common standards that hinder collaboration, insufficient R & D strength for key technologies, poor adaptability of agricultural robots and intelligent agricultural machinery, lack of integrated data platforms for scientific research institutions, leading enterprises, Internet companies, financial capital, as well as shortage of experts, funds, and platforms.

In general, China urgently needs to formulate various measures during the 14th Five-Year Plan period to build a solid foundation for the development of smart agriculture and to overcome obstacles mentioned above. Firstly, we need to give full play to the government's leading role, coordinate all kinds of resources, implement a batch of major projects centering on key areas and industries of smart agriculture, and promote the integration of primary, secondary and tertiary industries. Secondly, we should formulate policies for smart agriculture development and give political and financial support for technical products and application. Thirdly, we need to encourage the enthusiasm of market and enterprises and by this establish a multi-party funding mechanism to increase investments. Fourthly, we need to speed up the formulation of technical standards in smart agriculture and the construction of talent teams, strengthen independent technical innovation and international cooperation, and establish an open data sharing mechanism to promote the sustainable development of smart agri-

culture.

Good to Know

Politics and Law

China Rural Industrial Development Plan 2021-2025

On July 16th, the Chinese Ministry of Agriculture and Rural Affairs (MARA) released the "China Rural Industrial Development Plan 2021-2025". According to the proposed "plan", the establishment of the rural industrial system will be completed by 2025 and the quality and efficiency of rural industries will be significantly improved: the rural employment structure will be optimized and the channels for farmers' income will continue to expand.

The operating income of the agricultural product processing industry would reach 32 trillion yuan, the ratio of the agricultural product processing industry to the total agricultural output value would reach 2.8:1, and the main agricultural product processing conversion rate would reach 80%. The rural leisure tourism industry would receive more than 4 billion tourist visits annually, and its operating income would exceed 1.2 trillion yuan. The output value of agriculture, forestry, animal husbandry and fishery and auxiliary activities, and the network sales of agricultural products would also reach 1 trillion yuan. More than 15 million innovative and entrepreneurial personnel would return to their hometowns for redevelopment of these rural regions.

This plan laid out several missions:

1. Improve the agriculture processing industry.
2. Expand rural-specific industries.
3. Optimize and promote rural tourism.

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4. Develop new rural service industries.
5. Accelerate the integration of agricultural and rural industries.
6. Promote new, innovative rural entrepreneurship and enterprises.

The full plan can be accessed here: http://www.moa.gov.cn/govpublic/XZQYJ/202007/t20200716_6348795.htm

Circular to Foster Rural Digitalization Released

On 18 July 2020, seven Chinese ministries including MARA jointly released a *Circular on Conducting National Rural Digitalization Pilot Work*.

The document points out that the rural digitalization is an important component of the national digitalization strategy. At the same time, it is also an important action to achieve the goals of agricultural and rural modernization and rural revitalization strategies. It is also a countermeasure to narrow the existing digital gap between urban and rural regions. The official document underpins seven key areas for implementing the pilot work:

- Comprehensive digital rural development planning
- Improve rural ICT infrastructures
- Foster the development of rural digital economy
- Pilot the digitalized rural governance and public service
- Further improve rural information service system
- Improve ICT resource and infrastructure synergetic integration mechanisms
- Pilot sustainable development mechanisms of rural digitalization

For a more detailed information please read Liu Yonggong's summary on <https://www.dcz-china.org/en/nachrichten-agri-news-d-en/seven-chinese-ministries-released-a-circular->

[to-foster-rural-digitalization-through-pilot-work.html](#) or full text in Chinese http://www.cac.gov.cn/2020-07/17/c_1596539938841028.htm

Business, Economy and Trade

China Approves Import of Chinese GM Soybeans

China will allow the import of genetically modified (GM) soybean products developed by a Beijing-based company, but produced abroad. It is the first time that China approved such an import permit certificate, which has been in effect since June 11 and will be valid for five years. China does not allow GM soybeans to be planted domestically, but the development of GM seeds and the import of certain types of GM crops are allowed. Developed by the Da Bei Nong Group, a Beijing-based high-tech agricultural company, the GM soybean has been engineered to tolerate pesticides and herbicides. In February 2019, the company's GM soybean was approved for commercial cultivation in Argentina.

More: <https://www.globaltimes.cn/content/1192850.shtml>

Environment

Disastrous Floods

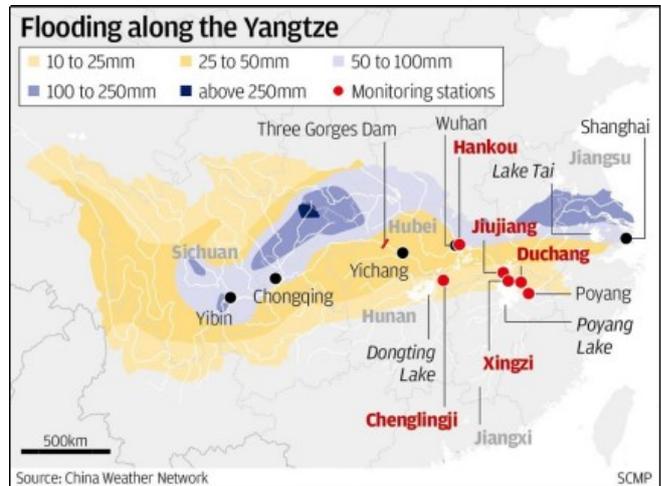
(Eva Sternfeld, DCZ)

In summer 2020, people in central and eastern China have been suffering from the worst floods in decades. According to the Ministry of Water Resources, by mid of July the water levels of 433 rivers were above the flood line and 33 of them were on record-high levels. According to the Ministry of Emergency Management, 37 million people in 27 of China's 31 provinces have been affected, more than

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1.8 million people have been evacuated, and the floods so far claimed the lives of more than 140 people. By mid of July, economic losses were estimated at 86 billion RMB (about 10.7 billion €). Among the worst hit places is Hubei province, China's epicenter of the COVID-19 pandemic. For example, it was reported that large parts of Enshi, a city with 400,000 inhabitants have been flooded and in the provincial capital Wuhan the broadwalks of Yangzi river were under water. Across the province, helicopters dumped tons of sand and gravel to stabilize embankments of rivers. Hubei province is located downstream of the Three Gorges Dam. The world largest dam definitely helped to control the floods from upper Yangzi areas to a certain degree, but by mid of July the water level of the reservoir was getting close to the maximum water level of 175 meters. There is so far no detailed information about the impacts on agriculture, however, it must be assumed that the losses are huge, as in some hard hit areas as in the Poyang Lake area in Jiangxi province levees collapsed and large areas of farmland were flooded. According to the newsletter Pig Progress it must be suspected that heavy rains impede efforts to restock ASF affected pig farms and even may cause new outbreaks. As farmers usually bury deceased pigs, it is feared that the disease is spread via groundwater.

In the Poyang lake area, where the lake reached its historic high of 22.6 meters, 24,000 soldiers and armed police officers have been deployed and local authorities urgently appealed to migrant workers to return to their home villages to help fighting the floods. In some towns in the Poyang Lake area local government called for evacuation of children and elderly people. The floods also caused heavy disruption of road and water transportation and made logistics extremely difficult. It was reported that in some flooded towns and villages food delivery



services turned to jetskis and rafts to deliver food orders.

According to experts, a combination of climatic reasons and human impact have contributed to the disastrous floods. An unusual strong subtropical high-pressure system over the North Pacific and its intersection with cold air in the Yangzi region have contributed to continuous heavy rainfalls. Also, climate change has an impact. According to the China Climate Change Blue Book (2019), since the mid 1990s frequencies of extreme rainfall have increased dramatically.

In addition, illegal land reclamation contributed to the disaster. In the river basins and the areas of the Dongting, Taihu and Poyang Lake large areas of land have been reclaimed for agricultural cultivation and construction and hence, the natural flood retention space of lakes and rivers has been reduced. Especially in the area of Poyang Lake, where in the past years large areas of the normally shallow lake had dried up, people might have been lulled into a false sense of security.

Sources: <https://www.scmp.com/news/china/society/article/3093713/global-warming-and-illegal-land-reclamation-add-severe-floods>

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https://www.pigprogress.net/Health/Articles/2020/7/ASF-Asia-Virus-likely-in-wild-boar-Korea-prepares-for-second-wave-618017E/?utm_source=tripolis&utm_medium=email&utm_term=&utm_content=&utm_campaign=pig_progress

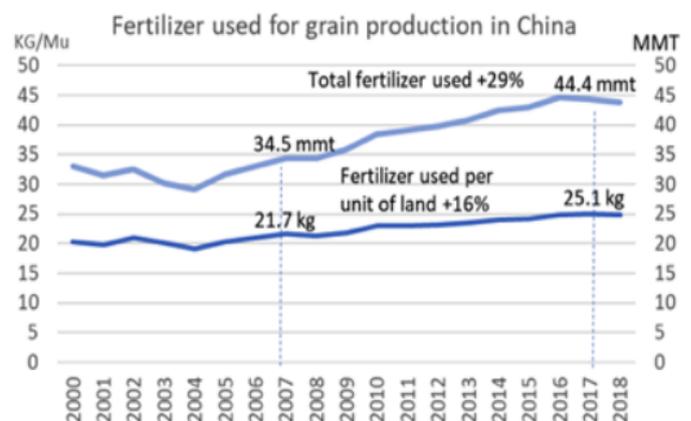
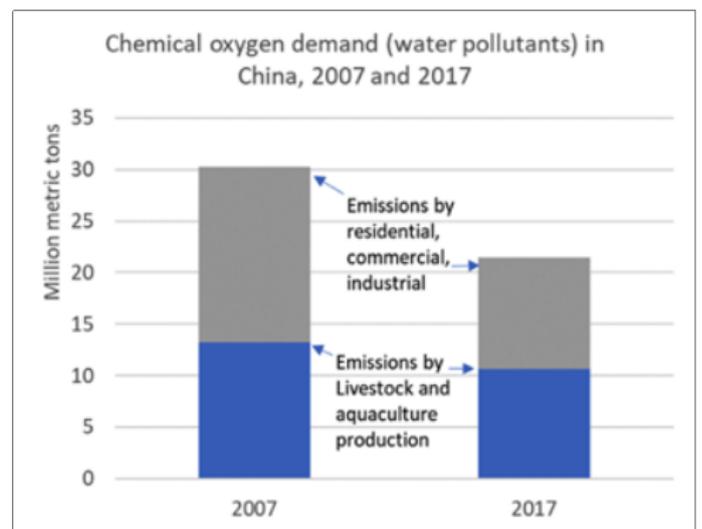
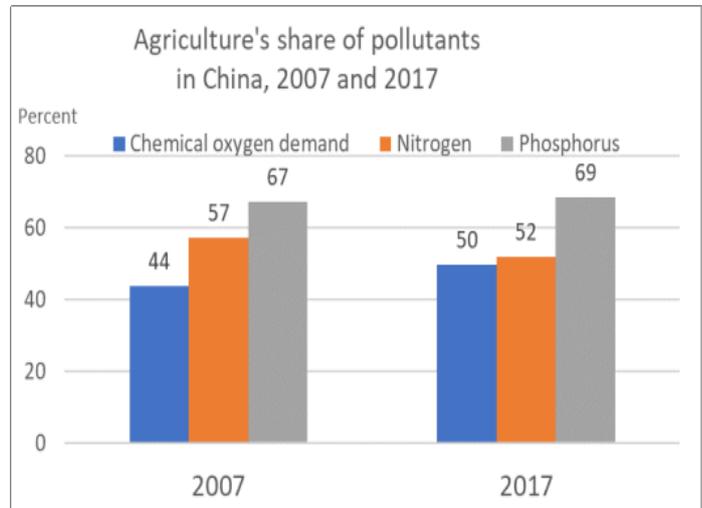
China's 2nd Pollution Census Reveals Agriculture as the Country's Biggest Polluter

China's second pollution census based on data from 2017 has been presented to the public in early June 2020. The data reveal that compared to the first census from 2007 there is a considerable decrease in total emissions, but agriculture made less progress than the industrial and residential sector. China's farms are responsible for half of chemical oxygen demand (COD) and nitrogen discharged and 69 percent of phosphorus discharges.

Although the total COD emissions from livestock and aquaculture farms considerably declined by almost 20 percent, the reduction was still modest compared to improvements achieved in the residential, commercial and industrial sectors.

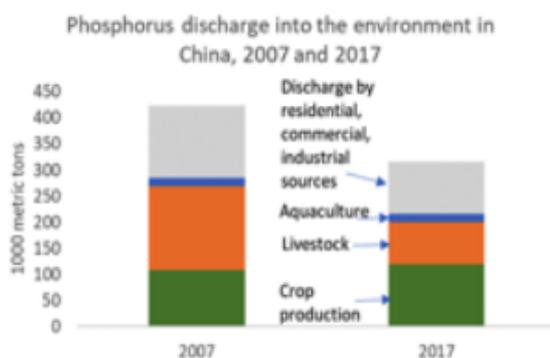
Nitrogen discharge declined by 42 percent between 2007 and 2017, whereas phosphorus discharge by agriculture sector declined by 25 percent. Here livestock's phosphorus reduction fell by 50 percent, whereas phosphorus emissions by crop production increased by 10 percent.

However, as noted by Dimsums, these data need to be treated with caution. It seems that the methodology used in the 2nd Pollution Census is different from the first and it is likely that only a few sample livestock farms have been surveyed. Also, the increased chemical fertilizer application by 29 percent between 2007 and 2017 indicates that the



Source: Dimsums.blogspot.com

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Source: Dimsums.blogspot.com

claimed 55 percent reduction in nitrogen seems hard to believe.

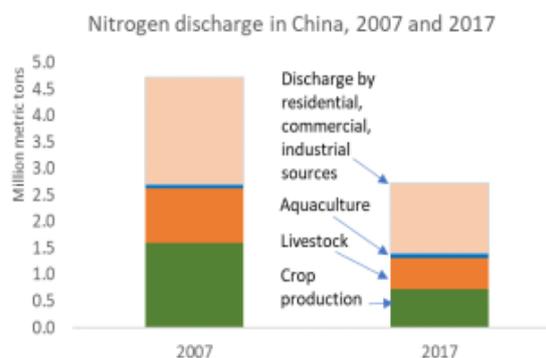
For more: <http://dimsums.blogspot.com>, July 1, 2020

COVID-19 Impacts

Beijing Outbreak: Xinfadi's Beef and Lamb Market Labelled as 'Extremely High Risk Area'

The unexpected COVID-19 outbreak in Beijing in June was initially connected to the seafood section of the Xinfadi market in Beijing's Fengtai district, where traces of the virus have been found on a board used to slice imported salmon. Recent reports, however, reveal, that far more cases have been related to the beef and lamb section of the market, where a total of 102 cases out of all 311 confirmed cases in Beijing have been detected. Thus, the beef and lamb market was labelled by health experts as an extremely high risk area with another 14-day quarantine being imposed on people who are connected to this specially designated area. More: <https://www.globaltimes.cn/content/1192861.shtml>

Meanwhile German exporters are concerned that rumors about contaminated imported products might have a long-lasting impact on consumers' trust in imported food. As men-



tioned above, in the early days of the Beijing outbreak imported salmon was suspected as a virus carrier and Chinese media were also quick to assure that the virus strain identified in Beijing's Xinfadi market was of European origin. Meanwhile in a nationwide testing most samples of imported fish and meat tested negative for COVID19. In early July it was reported that on some samples of shrimps imported from Ecuador traces of the virus have been found. Chinese authorities agree that there is a low risk of virus transmission by contaminated food. However, exporters of soybeans and meat are asked to provide declarations indicating their products are free of COVID-19. China has also stepped up inspections at the ports and this has led to backlogs of up to two weeks and increases of food prices.

Toennies Outbreak: China Suspends Import of Meat Products from Germany

The import of pork products from German has been suspended in China after Germany's largest pig slaughterhouse reported a massive COVID 19 outbreak with more than 1400 out of 7000 employees tested positive for the virus at Toennies company in Rheda-Wiedenbrück. As a cause of the outbreak the climate control system had been identified. Local authorities ordered the closure of the facility with a slaughter capacity of 20,000 to 30,000 pigs per day. The shutdown has

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already severe impacts for German pig producers. It is estimated that between 70,000 and 100,000 pigs per week have not been slaughtered and had to stay in the producers' farms. Although it is not proven that the virus can be transmitted by frozen meat, China suspended imports of pork products from Toennies and another German company as well from plants from Dutch meatpacker Vion and plants from Ireland, Spain, the UK, USA, Canada and Brazil. Seven other plants from Argentina, UK and Italy voluntarily stopped shipments to China. As a result, pork prices again rose by 50% compared to this year's lowest price in May. More: <https://www.pigprogress.net/Health/Articles/2020/7/Covid-19-Meatpacker-Tonnies-might-restart-with-safety-plan-609539E/>

The import ban will have serious impacts on a branch that witnessed a soaring demand from China in recent months. German Trade and Invest (GTAI) reports that during the first quarter of 2020, China sales of German meat producers (including Toennies) increased by 231 Percent compared to the same period in 2019. As a consequence of the dramatic decline of Chinese pork industry due African swine fever demand for imported pork meat even increased by 383 percent. <https://www.gtai.de/gtai-de/trade/branchen/branchenbericht/china/vertrauensverlust-fuer-importlebensmittel-in-china-befuerchtet-274070>

Back to the Countryside – Millions Migrants Return to Their Villages

The economic crisis caused by COVID-19 lockdowns has reversed China's rural-urban migration trends. According to data of the China National Bureau of Statistics in the first quarter of 2020 at least 50 million people have returned to their villages.

China's rural migrant workforce losses in Q1 2020

Item	Unit	2019	Q1 2020	Change
Rural migrant workforce	Million	174.3	122.5	-51.7
Average monthly earnings	Yuan	4,427	3,680	-747
Total earnings	Bil. Yuan	771	451	-321

Source: Dim Sums, May 18 <http://dimsums.blogspot.com>

ASF and Beyond

Strengthening Measures to Control ASF – Inspired by COVID-19

Inspired by the successful coronavirus control Chinese authorities are now strengthening measures to fight ASF outbreaks in swine farms with stricter controls for transportation and slaughterhouses. The "Guidance on strengthening measures to control African Swine Fever" issued by MARA on May 21 include systematic testing of farms in 498 hog-producing counties and the appointment of county livestock bureau officials responsible for conducting the compulsory testing. Authorities also plan to set up a grid system to organise systematic animal disease reporting. Each grid consists of a fixed set of villages and farms with a designated official in charge. More: <http://dimsums.blogspot.com> (May 24, 2020)

New Swine Flu With Pandemic Potential

Chinese researchers have discovered a new type of swine flu that is capable of triggering a pandemic, according to a study published on Monday in the US science journal *Proceedings of the National Academy of Sciences*. Named G4, it is genetically descended from the H1N1 strain that caused a pandemic in 2009. It possesses “all the essential hallmarks of being highly adapted to infect humans”, say the authors, scientists at Chinese universities and China’s Centre for Disease Control and Prevention and is therefore of potential pandemic concern. The virus G4 has been spreading since 2016 in China and the study mentioned above found that about 10% of swine workers from whom blood samples were taken had evidence of a prior infection with the virus. However, it is important to note that there are so far no reports about human-to-human infection.

More: <https://www.cdc.gov/flu/spotlights/2019-2020/cdc-prepare-swine-flu.html>

According to the German virologist Timm Harder, director of Reference Laboratory for Avian Influenza at the Federal Research Institute for Animal Health, the Friedrich Löffler Institute, the findings of the study need to be taken seriously; however, he sees no immediate danger of a spreading pandemic developing at the same time as COVID 19.

More: <https://taz.de/Forscher-ueber-Vireneuebertragung!/5693870/>

Science

CAAS Research Project on Agricultural Nano-drugs

The Chinese Academy of Agricultural Sciences (CAAS) launched a major scientific research project on the targeted delivery mechanism

of agricultural nano-drugs and the creation of new products. The research aims to improve the effectiveness and safety of agricultural drugs and realize the industrialization of agricultural nano-drugs through industry-university-research cooperation.

More: http://www.xinhuanet.com/english/2020-05/22/c_139079915.htm

Benefits and Risks of Digital Transformation of the Food Value Chain - IAMO Interview with Professor Wu Wenbin (CAAS)

Professor Wu Wenbin, Chief Scientist of the Key Laboratory for Smart Agriculture at the Institute for Agriculture Resources and Regional Planning of CAAS has been invited as a keynote speaker for the 2020 IAMO Forum. In an interview on the conference website Prof. Wu argues that looking at different links of the food chain, such as production, processing, transportation and consumption, in China the later is most advanced in terms of digital transformation, whereas the agricultural producer is the weakest link. China has seen a very rapid development of agricultural e-commerce. Asked if he agrees that mainly larger farms benefit from digital innovations, he explained that although individual small-scale farmers, who are still the majority of Chinese farmers, have some benefits by digital developments, for example access to market information and weather reports, their farms are often too small for efficient use of digital farming technologies. Therefore, adequate solutions for small-scale farms are needed. Wu Wenbin sees also risks of digital transformation such as difficulties to ensure information security and that a dominance of a few service providers can cause a monopoly situation. Read the full interview here: <https://forum2020.iamo.de/what-our-speakers-say/wenbin-wu/>

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Recent DCZ Activities

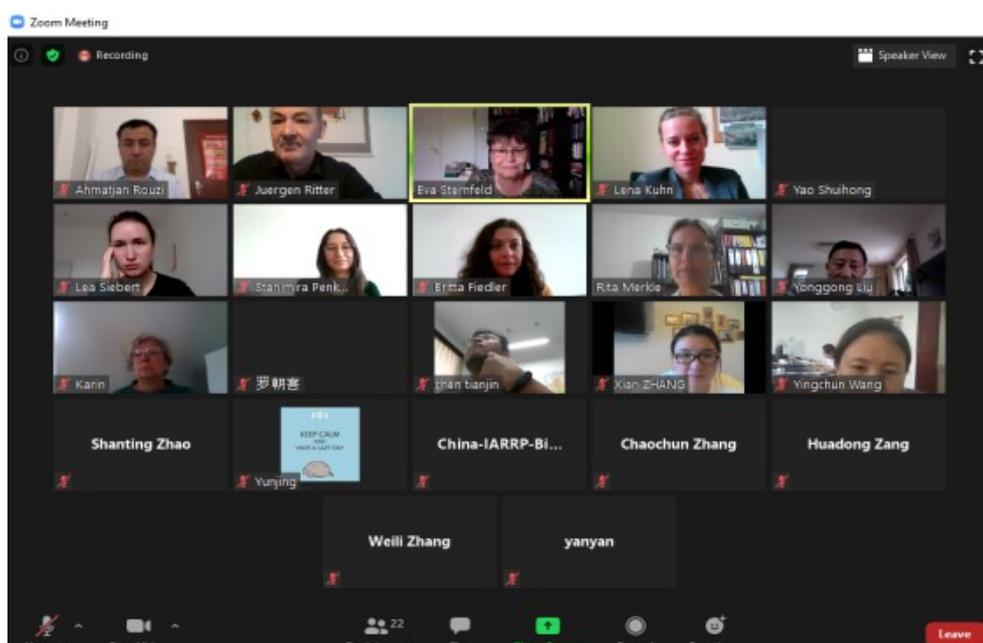
DCZ Online Workshop „Sino-German Cooperation in Agricultural Sciences“

On June 10, 2020 the DCZ S&T platform in cooperation with the Institute of Agricultural Resources and Regional Planning (IARRP) of CAAS organised a workshop on Sino-German cooperation in agricultural sciences. Due to the COVID-19 pandemic the event was organised as an online conference. The meeting was attended by 22 experts from various institutions of both countries including CAAS, China Agriculture University, Huazhong Agriculture University and North-West University for Agriculture and Forestry, Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Foreign Economic Exchange Center of MARA and the DCZ. The experts had been invited to give their feedback on a draft report of a baseline study on bilateral research cooperation and to discuss how to proceed with the study.

After welcome speeches delivered by Dr. Chen Tianjin, Department for International



Cooperation, Head of Division for Bilateral Cooperation, CAAS and Dr. Jürgen Ritter, German managing director of DCZ, moderator Dr. Eva Sternfeld, German advisor for DCZ S&T platform, introduced the participants of the meeting. Afterwards consultant Dr. Rita Merkle presented the main findings of the baseline study based on a survey conducted in February and March 2020. The quantitative and qualitative survey approached German agricultural research institutions, including research institutes affiliated to the German Ministry for Food and Agriculture (BMEL) and Leibniz Institutes, German



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universities and German universities of applied sciences. In all, 21 institutions participated in the survey, which is to our knowledge the first comprehensive inventory of ongoing German-Chinese bilateral cooperation projects in agricultural sciences. According to the quantitative survey 122 ongoing cooperation projects have been identified so far. In addition, Dr. Merkle also summarized the outcomes of the qualitative survey. Respondents see great opportunities in the cooperation with China such as the unique diversity of China's natural environment and agricultural cultivation systems, which are hard to find in Germany, as well as the opportunity to work with highly-qualified Chinese researchers. Nevertheless, also challenges in the bilateral collaboration have been mentioned such as lack of financing and problems with data sharing. The respondents of the survey have also been asked for recommendations how the DCZ S&T platform could help to enhance future cooperation. The respondents provided an impressive list of ideas, which focus on the S&T platform's role as information and networking platform.

Dr. Merkle's presentation was followed by a vivid discussion about the DCZ S&T platform's role as an information sharing platform and how funding for bilateral research projects could be secured. It was agreed, that this short meeting was only a start to set up a bilateral experts network and future workshops will follow. The work on the survey will be continued and another feedback round with German researchers is planned. A final version of the survey will be presented at the Sino-German Agricultural Week. (Eva Sternfeld)

DCZ Participation in IAMO Forum 2020

Between June 24-26, the Leibniz Institute for Agricultural Development in Transition Economies (IAMO) held its annual international conference focusing on the topic „Digital transformation – towards sustainable food value chains in Eurasia“. Due to the COVID-19 pandemic this year's conference was held online. More than 400 participants from all over the world attended the event. DCZ as well as representatives of DCZ partner institution, the Chinese Academy of Agricultural Sciences (CAAS) actively contributed to the conference. In his keynote speech Professor Wu Wenbin, from the Institute of Agricultural Resources and Regional Planning (IARRP) of CAAS and Chief Scientist of the National Key Laboratory for Smart Agriculture explained how “digitalisation empowers the development of China's agriculture and rural areas”. Professor Hu Xiangdong from the Institute of Agricultural Economics and Development (IAED) of CAAS chaired an organised session on “Digital transformation and sustainable agri-food system in China”. A second session with a focus on China was organised by Dr. Zhanli (Jerry) Sun and Dr. Lena Kuhn from IAMO's China research group. For the DCZ science advisor Dr. Eva Sternfeld participated in this session. In her presentation “Digital



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tools for small-scale and sustainable farming – lessons learnt and options for future research cooperation” she introduced to DCZ’s activities in the field of smart agriculture including two Sino-German conferences which have been organised in cooperation with IARRP/CAAS and the Leibniz Institute for Agricultural Engineering and Bio-Economy (ATB) and the Leibniz Center for Agricultural Landscape Research (ZALF) and lessons learnt from these activities.

The DCZ also actively contributed to the so called “virtual foyer sessions” which were organised on all three days during the virtual lunch break of the conference. On June 24, DCZ had the opportunity to present DCZ’s recent and planned activities in the field of smart agriculture. DCZ managing director Dr. Jürgen Ritter gave a presentation entitled “Meet the Sino-German Agriculture Centre (DCZ): an innovative and flexible platform”. On June 25 and 26, DCZ team members participated in the virtual foyer session organised by GFA consulting group on the topic “Bilateral Cooperation of BMEL – Together for a strong agriculture sector”. In this session Dirk Landmann (GFA) introduced to the Bilateral Cooperation Programmes (BCP) of the German Ministry for Food and Agriculture and representatives from the projects in Russia, Ukraine and China exchanged about

their experiences with activities related to smart agriculture and digitalisation. For more information about the IAMO conference and the detailed programme please also visit the conference website, see: <https://forum2020.iamo.de/program/>

Reports from Sino-German Agriculture Projects

News from the ChinaREs Project

Emission Reduction via Nutrient Balances in China and Germany

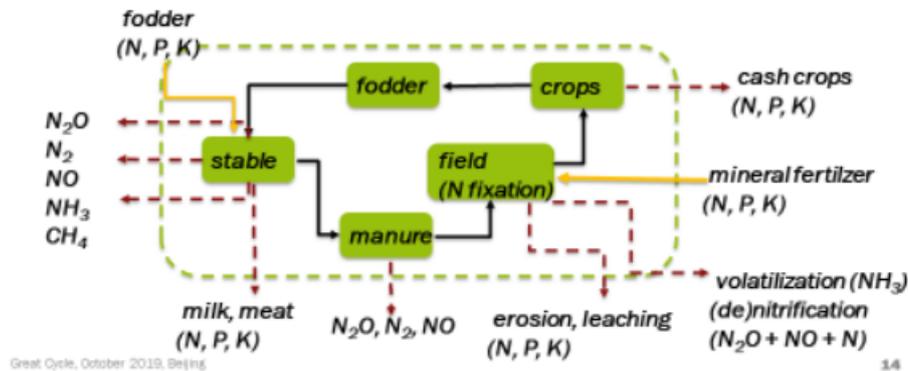
In the ChinaRes project, Chinese partners from China Agricultural University (CAU), Chinese Academy of Agricultural Engineering (IEEP) and University of Hefei (UH) together with German partners from Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB) and German Biomass Research Centre (DBFZ) work on the utilization of agricultural residues. In both countries reduction of greenhouse gas emissions, especially from animal residues by anaerobic digestion and efficient use of the digestate as fertilizer is a big challenge.

One part of the challenges is the efficient use of the digestate as a fertilizer. On one hand, securing of high yields is important for the food and feed supply of both countries. On the other hand, overfertilization needs to be avoided, as it is a waste of resources, generates enhanced greenhouse gas emissions, especially nitrous oxide (N₂O), and high risks of nutrient transfer into ground and surface water bodies, resulting in high nitrate contents, eutrophication, algae overgrowth etc.

Despite the existing “Recommendation for soil nutrient analysis-based synthetic fertilizer application for corn, wheat and rice”

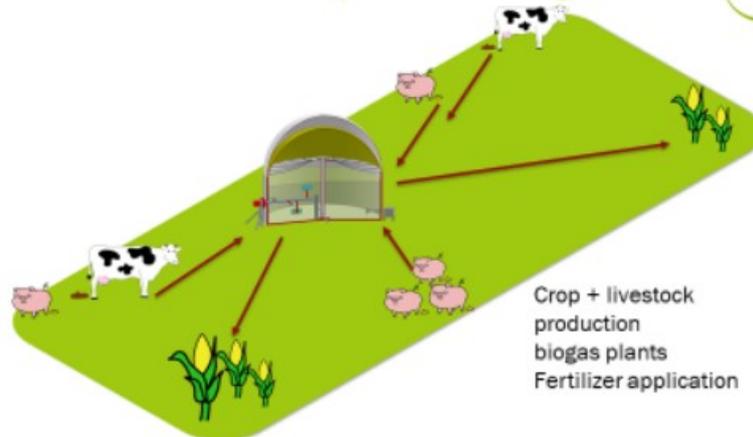


Nutrient balance: nutrient imports and exports



14

Nutrient balance with respect to the logistics



20

Source: DBFZ

published by the Ministry of Agriculture of the P. R. China in 2013, the oversupply of nutrients in order to achieve higher yields is still very high.

In Germany, the Fertilizer Ordinance (DüV) sets the specific limits for nitrogen (N) and phosphorus (P) fertilization depending on the site-specific yield level. Before and during the winter period without relevant nutrient uptake by vegetation, application of fertilizers which are rich in soluble nitrogen is not allowed due to the leaching risk. Additionally, there is a regulation on storage of organic fertilizers. It further calls for a careful

quantification and documentation of imports and exports of N and P and thus, for a detailed compilation of nutrient balance at farm level. The application of a nutrient balance method with its potential benefits for manure treatment as well as yield increases of cash crops and simultaneous N-related emission reduction was discussed by Velina Denysenko from DBFZ with the Chinese partners. Furthermore, the potential transfer and further development of balancing the nutrients in accordance with the very heterogeneous agricultural farm conditions in China were highlighted.

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Nutrient balances are the central tool in order to

- manage nutrient efficiency
- avoid environmental burdens by several emission flows
- plan regional distribution and application of organic fertilizers and develop appropriate technological solutions and applications

At the end of 2019, a workshop on the improvement of agricultural residues treatment was organized and hosted by University of Hefei. The scientists from the University of Hefei, the representatives of the local agricultural extension center in the province Anhui as well as Dr. Walter Stinner and Velina Denysenko from DBFZ were discussing the question of best practice approaches to supply agricultural fields with the required amount of nutrients from livestock manure. One option is the anaerobically digested manure with particular attention on the regional concentration levels and availability as well as the costs of logistics.

The effect of application technologies, especially the strip-till technology for avoiding ammonia (NH₃) losses and ensuring high nutrient efficiencies and high yields was discussed. While open spreading of liquid ammonia-rich fertilizers as well as the typical way in China to produce solid, dried fertilizers from the manure may lead to > 90 % of ammonia losses, whereas nitrogen, responsible for yield and protein generation of the crops is saved in the root zone of the crops. However, Chinese fields are mostly much smaller than fields in Germany, so for efficient application the German technology needs to be adapted to Chinese conditions.

Contact: Walter.Stinner@dbfz.de; Velina.Denysenko@dbfz.de

News from the Sino-German Animal Breeding and Husbandry Project

Online Training Continues with Gilt Selection and Implementation on Pig Demonstration Farm

The second half of 2020 already started and the COVID-19 pandemic still keeps people from travelling between China and Germany like. Nevertheless, the Sino-German Animal Breeding and Husbandry Project continues its consultations via online meetings, online trainings and the exchange of training videos.

In this context, the training and education program with the demonstration farm Henan Yifa Animal Husbandry Co., LTD. has been restarted in an online version. So far, there have been two different trainings in the field of pig production with the topics “farrowing” and “nursery” with Yifa. The latest training on “gilt selection and implementation” took place from July 15 to 17, 2020, with strong support from Dr. Ulrich Presuhn.

On the first day, the participants started with an opening ceremony, organized by the company management, before the first theoretical part of the training course started. This 2.5h-session was offered by Dr. Ulrich Presuhn, supported by the projects long-term expert Henrik Delfs.



Source: ADT

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Dr. Presuhn is a well-experienced consultant in the fields of pig husbandry and breeding. He explained to the staff of the farm what steps have to be made and how to get reliable results of gilt selection. First of all, it is very important to have a constant team of workers, who are responsible for the selection. Second, it is essential to follow the same schedule and routines every time. Furthermore, Dr. Presuhn and Mr. Delfs explained how Yifa is able to expand the number of sows within the production capacity in the breeding farm by implementing gilts and by changing from a 3-week to a 1-week batch management.

The practical part of the training course was held by Yang Songbai (production manager of Yifa), who attended the first training course of the Sino-German Farm Education Programme with the topic “data management / gilt selection and gilt implementation” in December 2018, which was also held by Henrik Delfs.

Dr. Presuhn and Mr. Delfs were connected via WeChat with the project assistant He Yuan, who travelled from Beijing to Yifa to hold the training and translate from German into Chinese and the other way around. So all participants and the trainers were able to give suggestions and answer questions live.

On the last day, the participants had to take a test about the past theoretical and practical training sessions, designed and organized by Yifa itself. All participants were very pleased with the organization and the content of the training course.

The correct gilt selection, done by the team of Yifa itself will also show an improvement in biosecurity, because Yifa will be able to reduce the number of customer-visits to a minimum. Simultaneously, Yifa can ensure a constant quality standard of sold gilts in the future. The gilt implementation management is essential for a functioning production



Practical training on pig selection (Source: Yifa)

system. It is the basis for a constant pig output.

(Henrik Delfs, ADT)

News from the Sino-German Crop Production and Agrotechnology Demonstration Project (DCALDP)

Series of Webinars

In order to carry out trainings during the very critical period caused by the COVID-19, DCALDP started to work together with DLG and organized a series of online webinars.

15.05.2020, Topic: Albrecht Method

In this webinar, the team leader Mr. Alejandro Figueroa introduced the Albrecht Method for the soil analysis. The topic addresses the one-sided fertilization in China's agriculture, based on Nitrogen (HASTO) and Phosphate (DAP). Plants, however, need more than these two fertilizers. With the Albrecht Method we want to explore how the soil nutrient balance looks like. Till now, 4323 visitors have watched this video. This webinar can be viewed through the link below

<https://wx.vzan.com/live/tvchat-356266467?shareuid=0&v=1594009807477>

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中德农业技术交流讲座·第一期

— 中德示范农场专家讲堂① —

你的农田里有蚯蚓吗？
葡萄甜吗？
土壤告诉你！

开始时间：2020年5月15日15:00

4183

Alex Figueroa

德国农业专家 20年专注于可持续农业发展 尤其在作物

22.05.2020, Topic: Cover Crops in Praxis

回放 中德农业系列讲堂·第二期

— 中德示范农场专家讲堂② —

用另一种方式耕作
- 用光合作用取代发电机
- 用生物多样性取代除草剂

整地机械的正确打开方式

开始时间：2020年5月22日15:00

Alex Figueroa

德国农业专家，20年专注于可持续农业发展，尤其是在作物
种植和土壤健康领域以及农业机械化推广方面。
2019年担任中德示范农场合作中心主任。

中德农业系列讲堂：用另一种方式耕作 & 整地机械的正确打开方式

视频 | 2020-05-22 15:00

1208人次观看

In this webinar the team leader Mr. Alejandro Figueroa introduced how cover crops work for our crop production and the way how to incorporate cover crops. Cover crops are part of soil fertility. Feed the soil with cover crops and the soil will feed your plants.

Till now there are 1208 visitors watched this video. The webinar can be viewed here:

<https://wx.vzan.com/live/tvchat-112954370?shareuid=0&v=1594009899823>

Cover-crops :
a new pillar of sustainable farming

«Replace steel by roots, fuel by photosynthesis and urea by nodules and a good part of agrochemicals by biodiversity»

« Another way to till the soil »

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29.05.2020, Topic: Modern Soil Preparation Technology



中德农业系列讲堂：现代土壤耕整技术

视频 | 2020-05-29 15:00

1118人次观看

In this webinar, team leader Alejandro Figueroa introduced the modern soil preparation technology in Europe. Furthermore, he talked about how to choose an appropriate soil preparation technology for application and to make use more efficient. Till now there are 1118 visitors watched this video, which can be traced through link below:

<https://wx.vzan.com/live/tvchat-563277159?shareuid=0&v=1594009972535>

19.06.2020, Topic: Spray Technology



中德农业系列讲堂：中德示范农场打药与喷洒技术

视频 | 2020-06-19 15:00

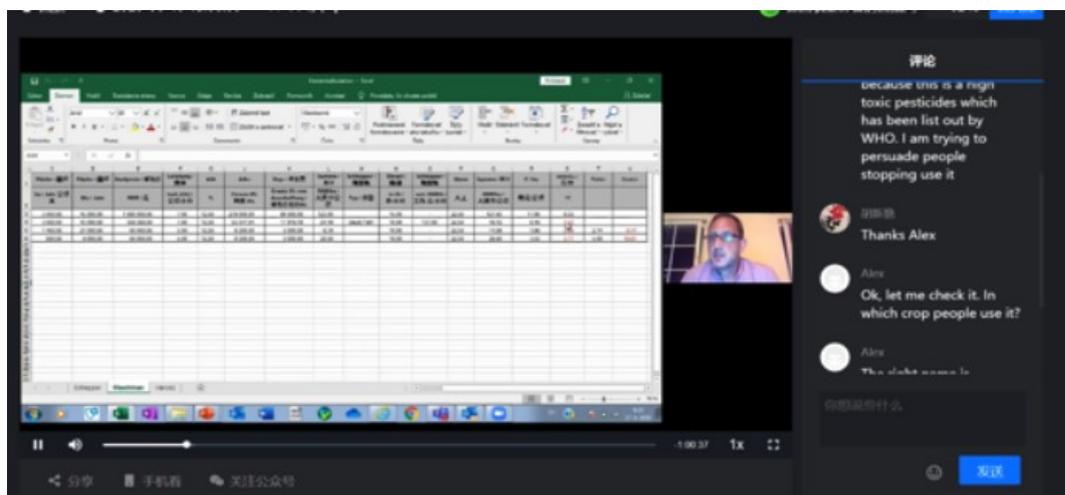
776人次观看

In this webinar team leader Alejandro Figueroa presented modern spray technology as well as choices of nozzle application. If we can reduce the input of pesticides by using modern technologies, we are doing something good for the environment and safe money at the same time. Till now 776 visitors visited this video, which can be traced through the link below:

<https://wx.vzan.com/live/tvchat-153635272?jumpitd=1&shareuid=0&fr=&sharetstamp=0#/>



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Some feedback

These are the webinars the DCALDP team has done so far in May and June. For July and August, we are preparing more webinars with topics such as field documentation or field management.

Compared to traditional seminars, webinars have more technical requirements. First of all, good internet connection is absolutely important, secondly, we need a good software for webinars which has recording and interactive functions. We at DCALDP are now using ZOOM as our standard program, till now it works very well. Some hardware is also necessary, for example a good camera and microphone. Normally in a real seminar, we can get feedback from the audience directly. This is obviously not possible during a webinar. Therefore, we appointed a programmer to establish an online questionnaire for us. After the seminar we can send the link to the audience to fill in. For the next webinar we have planned to choose randomly several participants, who filled the questionnaire in as lucky participants, they will receive a cap with a logo of DCALDP as a gift. We hope through this we can get more feedback about the webinars.

Last but not least, the DCALDP team would like to thank DLG for the professional assis-

tance. Without the support from the DLG Team, we could not have provided such successful trainings. And also, special thanks should be given our team leader Mr. Figueroa, not just for sharing of his knowledge, but also his engagement. To get around with the internet traffic jam in the afternoon of China, he often gets up in the middle of the night EU Time, which is early morning in China. But for him it is pleasure.

(Jane Yu Haojing for the DCALDP Team)
Contact: jane.yuhaojing@afci.de

DCZ Publications

Livestock Production and Climate Change. Policy Brief by Gerhard Rappold

In Germany 7.3% and in China 6.6% of annual greenhouse gas emissions are attributed to the agricultural sector. In this policy brief DCZ climate expert Gerhard Rappold discusses best practice cases from Germany (Agricultural Cooperative Barnstädt, Sachsen-Anhalt) and China (Zhongyu company, Shandong province) for efficient nitrogen use in combined livestock and crop production. The cases show that enhancement of nitrogen

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use efficiency and a reduction in emissions can be achieved through improved feeding and barns, as well storage, processing and application of manure. Biogas contributes to renewable energy production and biogas effluent and residues can be used as fertilizer on the fields. The policy brief can be downloaded at

https://www.dcz-china.org/files/Seiten/Reports%20and%20studies/Policy_Brief-livestock_production_and_climate_change-04_2020.pdf

The Strategy 2030 of the German Dairy Sector - The Objectives of Animal Welfare, Sustainability and Environmental Concerns. Policy Brief by Lea Siebert and Dieter Künstling

This policy brief provides a short analysis of the *Strategy 2030* of the German Dairy Sector which has been released in January 2020 by several associations of the German agricultural industry. As ‘sustainability’ was set as the strategy’s guiding theme, the proposed measures concerning the objectives of ‘animal welfare’, ‘sustainability’ and ‘environmental concerns’ are assessed and key areas of further actions are defined. The appendix provides an overview of the association structures in the German milk sector. The policy brief can be downloaded at https://www.dcz-china.org/files/Seiten/Reports%20and%20studies/Policy_Brief-German_Milk_Strategy%202030-05_2020.pdf

News on DCZ Website

MARA Releases Guidelines to Accelerate the Development of Facility based Agriculture and Horticulture

On June 27, 2020, MARA released new guidelines that plan to build more than 2.0 million modern greenhouse facilities equipped with state-of-the-art smart technologies. DCZ expert Prof. Liu Yonggong summarizes the guidelines at <https://www.dcz-china.org/en/nachrichten-agri-news-d-en/mara-releases-guidelines-to-accelerate-the-development-of-facility-based-agriculture-and-horticulture.html>

For full text in Chinese please go to:

http://www.moa.gov.cn/govpublic/NYJXHGLS/202006/t20200629_6347402.htm

DCZ in the Media

DCZ managing director Dr. Jürgen Ritter was quoted by German newspaper “die tageszeitung” in an article about floods in central China. Access the article “Millionen von Fluten bedroht” under <https://taz.de/Hochwasser-in-China/!5694633/>

Reviews of Publications

SAIN Information Sheet No. 23: China’s Agricultural Plans in 2020

In this SAIN information sheet Dr. Yuelai Lu has summarized on China’s most important plans and strategies for agriculture in 2020.

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<p>Guideline for Agriculture and Rural Work in 2020</p> <ul style="list-style-type: none"> • Making every effort to maintain grain and pork output, ensure supplying of major agricultural products • Vigorously developing rural industry, promoting farmers' incomes • Advancing agricultural green development, improving resource use efficiency and ecological protection • Strengthening the construction of modern agricultural facilities, upgrading the technologies and facilities • Speeding up the development of rural social programmes, improving rural governance <p>Priorities for Planning and Development</p> <ul style="list-style-type: none"> • Winning the battle of poverty alleviation • Planning the agriculture and rural development for the period of 14th five-year plan • Advancing agriculture and rural green development • Advancing the demonstration of modern agriculture 		
<p>Crop Production</p> <ul style="list-style-type: none"> • Ensuring production and supply of grain & major products • Continuing planting structure adjustment & optimisation, • Promoting quality & efficiency of crop production • Advancing green production & sustainability • Strengthening industry regulation and supervision 	<p>Livestock & Vet Medicine</p> <ul style="list-style-type: none"> • Speeding up the recovery of pork production • Utilization and recycling of livestock and poultry wastes • Upgrading and transformation of livestock industry • Capacity building in animal epidemic prevention and control • Strengthening quality and safety supervision 	<p>Fishery Industry</p> <ul style="list-style-type: none"> • Ensuring the stable production and supply of aquatic products • Advancing aquaculture green development • Integrating the primary, secondary, and tertiary industries in fishery • Enhancing fishery resources conservation & aquatic ecosystem restoration • Actively promoting international cooperation
<p>S&T, Env & Energy</p> <ul style="list-style-type: none"> • Strengthening the S&T services for poverty alleviation • Improving industry contribution from S&T innovation • Speeding up the construction of S&T innovation mechanism • Promoting the efficiency of technology extension services • Making training program meet farmers' need • Intensifying agricultural environment protection 	<p>Safety and Quality</p> <ul style="list-style-type: none"> • Strengthening risk prevention • Strengthening law enforcement supervision • Improving the standard system • Improving regulatory system • Improving regulatory capacity 	<p>International Cooperation</p> <ul style="list-style-type: none"> • Deepening multilateral cooperation • Diversifying the import channels • Expanding the export of competitive products • Facilitating the enterprises to be integrated into global supply chain • Establishing foreign trade consultation & information release system • Strengthening personnel training
<p>Priorities for Green Development</p> <ul style="list-style-type: none"> • Actively promoting agriculture green production, increasing the supply of green and high quality agricultural products • Strengthening the control of outstanding environmental problems, cleaning up the production environment • Strengthening agricultural resources protection, improving resource use efficiency • Improving rural living environment and village appearance • Intensifying the pilot experiment, consolidating the foundation for agriculture green development 		

Source: SAIN Information Sheet No. 23

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A clearly laid out chart provides an overview for the work in crop production, animal husbandry, fishery industry, science and technology, energy and environment as well international cooperation. More detailed information is provided in the text. The information sheet can be downloaded at <http://www.sainonline.org/pages/zhishiku/信息通报/信息通报.html>

For free subscription of SAIN information sheets and newsletters please contact Dr. Yuelai Lu at y.lu@uea.ac.uk

SAIN Information Sheet No. 24: Status of China's Cultivated Land Quality in 2019

This Information Sheet summarizes the main results of MARA's second survey on "National Cultivated Land Quality Grades", which has been released in May 2020. The survey divides China's cultivated land into ten grades, grade one for the highest and grade ten for lowest quality. Compared to the 2014 survey, agricultural land quality slightly degraded to an average of 4.76. China's best agricultural land is found in the Northeast region (Heilongjiang, Jilin, Liaoning and Northeast of Inner Mongolia) with an average quality grade of 3.59, whereas the Loess Plateau Region with an average of 6.47 and the Qinghai-Tibet Region with an average of 7.35 have the lowest quality in cultivated land.

Fig 1. China's Agricultural Regional Planning Map



I - Northeast Region, II- Inner Mongolia and Great Wall Region, III - Huang-Huai-Hai Region
 IV- Loess Plateau Region, V - Middle and Lower Reaches of Yangtze River Region,
 VI - Southwest Region, VII - South China Region, VIII - Gan-Xin Region, IX - Qinghai-Tibet Region

(Adopted from National Cultivated Land Quality Grades in 2014)

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The info sheet also introduces the responsibilities of the the three ministries, MARA, Ministry of Natural Resources and Ministry of Ecology and Environment in respect of cultivated land protection and lists China's related recent policies and actions.

The information sheet can be downloaded at <http://www.sainonline.org/pages/zhishiku/信息通报/信息通报.html>

For free subscription of SAIN information sheets and newsletters please contact Dr. Yuelai Lu at y.lu@uea.ac.uk

Building Trust at Alternative Food Networks: The Case of the Beijing Organic Farmers' Market by Anne Veltes (MA thesis Aarhus University 2020)

In her MA thesis former DCZ intern Anne Veltes explores how consumers, who regularly visit the Beijing Organic Food Market (BOFM) address and respond to food safety issues. The MA thesis is based on a field survey conducted in autumn 2019 at the BOFM and organic farms related to the market. During her field research Veltes regularly visited the markets, observed consumers' shopping routine and conducted semi-structured interviews with 11 customers, 6 farmers and 2 vendors. Veltes argues that many Chinese consumers suspect food in conventional markets and supermarkets to be unsafe and therefore have concerns about their own health is the most important reason for younger middle-class Chinese to buy at alternative food networks (AFN), which comprise farmer's markets, community supported agriculture (CSA), group purchasing and community gardens where they believe they know the producers and can trust them. For this preference, environmental concerns played only a minor role and Chinese interviewees even wondered why organic food is so popular in Germany, although in Germany food safety

should be not an issue at all (p.52).

The Beijing Organic food market (BOFM) is a platform that had been established in September 2010 to connect organic farmers directly with consumers. About 50 farmers and vendors and around 4000 customers are getting together in the markets, which are organized at different locations in Beijing two to three times a week. Farmers, who participate in BOFM events are small and medium farmers who produce organic food but cannot afford the expensive third-party organic certification. Instead, BOFM has created its own principles and a certification called Participatory Guarantee System (PGS) based on regular farm visits of the market organisers. Veltes also introduces Beijing's other market which could be labeled as AFN, the Farm to Neighbors (F2N) market. With only two regular markets in a 22 million mega city she concludes that Beijing's AFN movement is still in its infancy.

Looking back at the Chinese history, Veltes explains that the majority of Chinese people only in recent years enjoys both food security and a choice between great varieties of food. Only since 1990s, supermarkets were introduced and by this food supply chains became longer and often less transparent. She further explains how concerns for food safety risks gradually developed and determine consumers' shopping decisions. It started probably in 1982 when the enactment of the Food Hygiene Law officially recognized the occurrence of food born diseases, including safety issues such as inferior hygiene, fake foods and food contaminated by the overuse of agrochemicals. Veltes explains how AFN evolved from concerns about food safety risks. She concludes that in the case of the BOFM through three different mechanisms consumers can built trust in the produce sold at the market. Firstly, they trust the BOFM as an institutionalized platform guaranteeing food quality of its vendors and the

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information shared on WeChat about PGS. Secondly, consumers can ensure themselves by visiting the farms participating in BOFM and thirdly, trust is created by recommendations of friends and relatives, who are regularly buy at the market.

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Can We be More Collaborative? Top-down Policies and Urban-Rural Divides in the Ecological Agricultural Sector in Nanjing, China by Danshu Qi, Zhenzhong Si and Stefanie Scott, *Society and Natural Resources*, June 2020

This article explores the ecological agriculture in Nanjing. The authors conclude while large-scale ecological agricultural enterprises receive strong government support, small-scale ecological farms are left to struggle on their own. They also find increasing tensions between „new“ farmers and local traditional farmers and therefore find an increasing urban-rural divide between the so-called ecological farms.

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Upcoming Events 2020-21

With ongoing Corona crisis all dates of conferences and trade fairs tbc.

Date	Location	Event	Contact
October			
30-1.11	Qingdao	CIAME – China International Agricultural Machinery Fair	Qingdao World Expo City International Exhibition Center http://ifw-expo.de/exhib/ciame-2020-2/ Registration German Pavillion Friederike Arnz: f.arnz@ifw-expo.com Tel. +49 62211357-0
November			
4-5	Shanghai	14th China International Food Safety & Quality Conference	www.chinafoodsafety.com angela.cheng@infoexws.com Lyd-ia.wang@infoevents.com.cn
30-6.12 tbc	Beijing	Sino-German Agricultural Week	www.dcz-china.org
2021			
June			
8-10	Gut Brockhof, Erwitte Lippstadt (Germany)	DLG-Feldtage Meet the Crop Professionals	www.dlg-feldtage.de
23-24	Hessian State farm Gladbacherhof, Aumenau, Vilmar	Öko-Feldtage (Organic Field Days)	https://oeko-feldtage.de/?lang=en

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Imprint

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Any news about upcoming events and conferences to share? Please send your information to e.sternfeld@iakleipzig.de

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