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. 5 March/April 2019

With support from

Federal Ministry of Food and Agriculture

by decision of the German Bundestag

Sino-German Agricultural and Food Update

中德农业与食品通讯

No. 5 March/April 2019

In this issue

Foreword

Cover Story

◇ "Plant Variety Protection as a Basis for Private Investment in Plant Breeding" by Dieter Rücker, German Plant Breeders' Association (BDP)

Good to Know

◇ Document No. 1 released

◇ State Council on promotion of small farmers and modern agriculture

◇ China announces Food Safety Testing Plan

◇ African Swine Fever update

DCZ Activities

◇ 24th Expert Group Meeting on Sino-German Agricultural Research Collaboration held in Hangzhou

◇ VDMA Agricultural Machinery China Management Meeting held in Qingdao

◇ Plant Variety Protection Workshop and China Seed Congress

More News from Sino-German Agricultural Cooperation

◇ China-Germany Biomass Research Center Technical Tour to Anhui province

Reviews of Publications

◇ "Organic Food and Farming in China – Top-down and Bottom-up Ecological Initiatives"

◇ "Reforming the Humble Pig. Pig, Pork and Contemporary China"

Call for Proposals

Calendar - Upcoming Events

Imprint

Foreword

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

As every year, Document No. 1, published by the State Council on 19 February 2019, outlines the important policy issues for agricultural and rural development in China. This year the Document emphasizes the role of agriculture, farmers and rural areas, the so-called san nong 三农, as a stabilizing factor in a difficult period of development, domestically and internationally. In eight sections the Document stresses the specific aspects that need to be addressed in order to achieve this objective. This edition of our Newsletter provides a summary on this important document.

A cover story is dedicated to an essential topic within agricultural development. While participating in a joint workshop on seeds and Plant Variety Protection (PVP), Mr. Dieter Rücker of the German Plant Breeders' Association kindly contributed to this edition of the Newsletter and provided us with additional background information on this issue.

Besides this joint workshop, DCZ experts also attended the Beijing Seeds Congress 2019 which was excellently organized by the China National Seeds Association.

In addition to various information on agricultural policies and the activities of our Sino-German Agricultural Centre you will also find some book reviews included which could be worth reading.

I also want to take advantage of this foreword for a pre-announcement – a separate and official announcement will be sent to you shortly: in connection with the upcoming visit by the German Minister of Agriculture Ms. Julia Klöckner we plan to organize this year's Agrobusiness Conference on 14th of June in Beijing. Please pay attention to further details which we will provide in the days to come.

While hoping that this edition of our Newsletter can once again supply you with information of interest, we will be happy to see you at our events.

With our best regards

Dr. Jürgen Ritter

Managing Director

Sino-German Agricultural Centre (DCZ)

Cover Story

Plant Variety Protection as a Basis for Private Investment in Plant Breeding

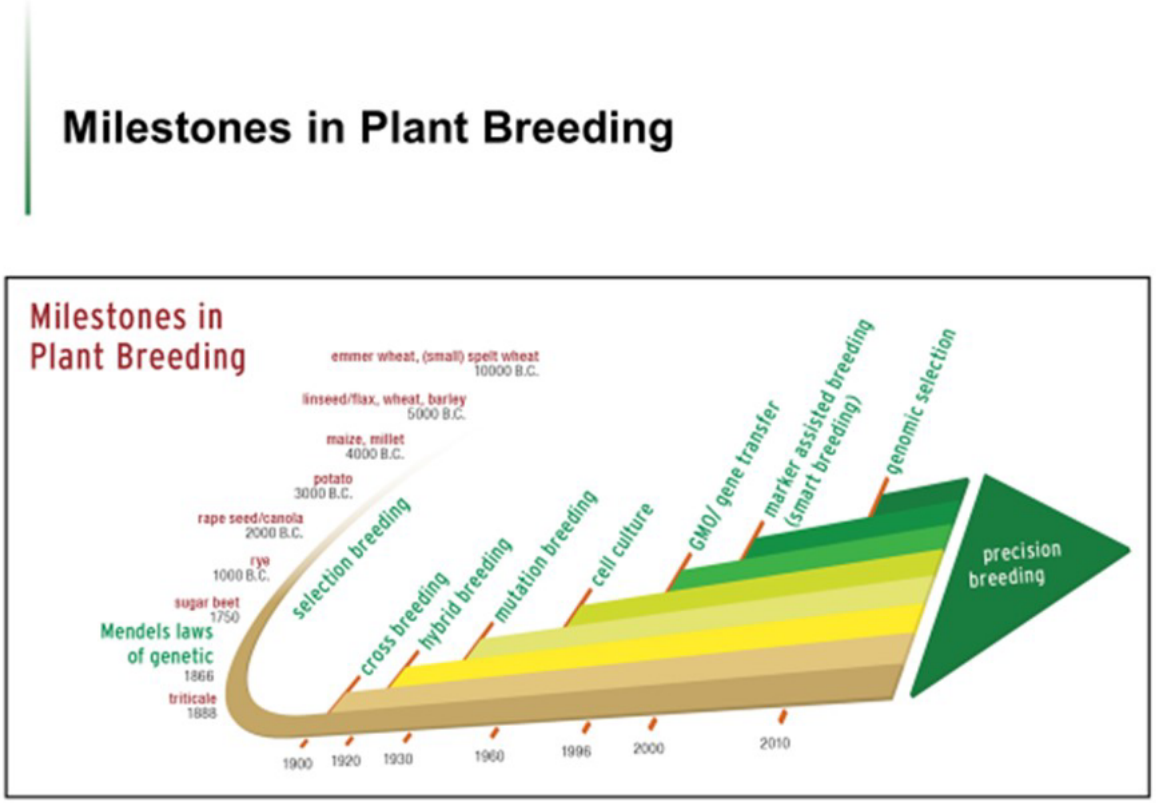
Dieter Rücker, German Plant Breeders' Association (BDP)

Introduction

Modern plant breeding gives a strong contribution to agricultural production. Experts estimate that at least 30 percent of the yield increase of plant production can be attributed to improved genetics. In addition, new varieties improve the quality of the harvest material and contribute to better resistances against plant pests. Drought resistant varieties can help to deal with the effects of climate change.

In 1866 Gregor Mendel published his groundbreaking rules of heredity. It took until the end of the 19th century that systematic cross breeding was introduced to improve the genetics of plant material for agriculture. From then on things started to move rapidly. In the last century a great number of modern plant breeding methods have been developed allowing breeders to improve the genetic quality of plant material for agricultural production (see illustration below).

Today, modern plant breeding is a high-tech procedure. It takes at least 1,000,000 euros and 10 years to develop a new high-performing variety.



Milestones in Plant Breeding (Rücker, BDP)

Organisation of plant breeding

In market economies plant breeding is usually conducted by private companies. While basic research and the development of methods are done by universities and state institutes, the development of varieties is privately organised. In Germany, with very few exceptions only, private companies engage in variety development. In socialist economies, this is a different story. During socialist times plant breeding in Eastern Germany was organised in state breeding institutes. After reunification, however, the state institutes could not compete with private enterprises. Either they were taken over by a private-owned business or they went out of operation.

Also in China, universities and public breeding institutes took care of plant breeding and variety development in the past. In the last couple of years private companies have started their own breeding operations and offer varieties on the market.

Since plant breeding is a costly exercise the companies have to make sure they earn a return on their substantial investments in the market place. Seeds usually reproduce themselves, once they are put in to grow. Therefore, protection of intellectual property in plant breeding is crucial for the development of private seed industries. Plant variety protection (PVP) restricts the use of a protected variety to the permission of the variety owner. He will only give his consent subject to a reasonable fee (royalty).

Plant variety protection versus patent protection

In Germany and in the European Union plant varieties can only be protected by plant variety protection (PVP). Patent protection can only be granted for technical inventions in the framework of plant breeding, but not for the variety itself. There is good reason for this distinction. The main difference between PVP and patent protection is the so-called "breeders' privilege". This privilege implies that any breeder can make use of a protected variety in his breeding operations. As soon as he can develop material that is distinct from the initial protected variety, he can claim this new material for himself. Patented material can only be used in the breeding process if the initial breeder gives his consent. The breeder's privilege in PVP guarantees the best breeding progress because all breeders can make use of the best available material for further research and development.

CNSTA, PLANTUM and BDP workshop on implementation of plant variety protection

With the establishment of private plant breeding companies in China, the interest in PVP has increased considerably. This was the starting point for a joint workshop of the China National Seed Trade Association (CNSTA), the Dutch Breeders' Association (PLANTUM) and the German Breeders' Association (BDP) on 18th March 2019 in Beijing. With the support and in the framework of the DCZ project, experiences with PVP in the three above mentioned countries were presented and discussed. It became evident that there is a lot of interest in sharing experiences with PVP infringement in China. The PVP legislation in China does fulfill international standards (UPOV 78), but implementation needs improvement. The participants of the PVP workshop in Beijing presented many cases where PVP infringements could be successfully prosecuted. However, there is still a long road ahead. CNSTA, PLANTUM and BDP committed themselves to a further cooperation in this field.

Good to Know

Document No. 1 released

On 19 February 2019 the State Council released the so-called Document No. 1, which outlines the important agricultural policies for the year 2019. The title calls for the good management of the "three rural issues" (san nong 三农), namely agriculture, farmers and rural areas. In the preamble the government expresses its concern about the present "downward pressure of economy" in times of a complicated international environment and stresses the importance of the agriculture and rural sector to provide stabilization and security to cope with these challenges. It calls for a deepening of reforms and a resolute implementation of the rural vitalization. The document focusses on the following topics:

1）Poverty alleviation

This measure aims at lifting all remaining poor counties (corresponding to 1 percent of China's population) out of extreme poverty by 2020. This includes a continuous development assistance by richer regions in eastern China to poorer regions in western China. A special focus is put on the "3 regions and 3 prefectures" 三区三州 namely Tibet, the south of Xinjiang and the autonomous Tibetan regions in Sichuan, Qinghai, Gansu and Yunnan province, as well as the Liangshan prefecture in Sichuan, Nujiang prefecture in Yunnan and Linxia prefecture in Gansu. Special mention is made to the so-called ecological poverty alleviation including a relocation of people living in areas with marginal natural resources and vulnerable ecosystems.

2）Stabilize agricultural production

A strong focus is put on ensuring domestic food security and "*basic self-sufficiency*" in grain production and "*absolute security*" of grain rations. The red line of 110 million ha for grain production and 120 million ha for cultivated land is to be kept. Provincial governors shall be responsible for ensuring food security. Specialized production zones include the promotion of Xinjiang's cotton producing zones as well a high-quality sugar cane production in southern China. In the northeast of China the protection of black soil is in the focus, whereas in northern China the control of excessive groundwater exploitation shall be targeted. Pilot projects for the remediation of soils contaminated by heavy metals shall be introduced. The production of "green" high-quality products shall be supported and as an implication of the trade war the implementation of a *soybean revitalization plan* shall promote a considerable increase of China's domestic soybean production, thus helping to reduce the reliance on imported soy. The document also calls for increased efforts to control and prevent African Swine Fever.

These measures shall be achieved by the promotion of technological innovation and smart agriculture and demonstration parks for agricultural high-tech. The document also calls for a strengthening of agricultural projects outside of China ("going out") as well as an international cooperation within the scope of the Belt & Road Initiative (BRI).

3）Promotion of rural construction and improvement of living conditions of people residing in the country side

The document calls for the dissemination of the "One thousand demonstration villages and 10,000 renovation villages" (千村示范万村整治) programme in Zhejiang province within a period of three years. This programme was originally initiated in 2003 while Xi Jinping was Party Secretary of Zhejiang province. The programme aims at improving sanitation and environmental conditions in rural areas and upgrading housing and infrastructure in villages. Besides roads and the improvement of electricity supply, the plan also aims at the improvement of broadband access for people

of electricity supply, the plan also aims at the improvement of broadband access for people in the countryside and improvement of public services such as access to education and health services, including the introduction of a basic health insurance system and old-age pensions for rural residents comparable to those of urban citizens.

Pollution control in rural areas shall be strengthened, especially non-point source pollution. The use of chemical fertilizers and pesticides shall be reduced, ecological agriculture and circular economy including utilization of straw and livestock manure shall be promoted.

4）Development of rural industries

To increase the income of people in rural areas industries adapted to local conditions shall be developed. This especially applies to food processing industries and characteristic handicrafts. Distribution of these products shall be supported by the establishment of transport logistics and wholesale markets. The internet and digitalization will play an increasingly important role. The document stipulates pilot projects for the agricultural IoT (Internet of Things). This and more investment in education shall also encourage migrants and college graduates to return to the countryside.

5）Deepening of rural reforms

Two types of agricultural operators shall be supported: Family farms and farmer cooperatives. This shall be done by the establishment of model cooperatives and preferable policies supporting family farms and cooperatives, with enhancing links between small farmers and modern agricultural development, farmers and cooperatives and farmers and companies, respectively. The stipulated measures also cover the deepening of the reform of rural land system, including the improvement of farmers' rights to contract land and the liberalization of land management rights, with the possibility to trade contracted land for financing. A revision of the Land Management Law and the Property Law is announced and in the context of rural reforms also the continuation of pilot projects for rural insurances including income insurance for the cultivation of rice, wheat and maize and the introduction of pilot projects for insurance against natural disasters.

6）Improvement of rural governance

This again includes the establishment of demonstration villages and towns for rural governance and improvement of the legal service system on village level. The efforts to establish 'village harmony' according to the document also include the fight against criminal and so-called 'illegal' religious activities.

The paragraphs 7 and 8 focus on the (re-) strengthening of the party organisation at village level. According to indicators released in the Five-Year Plan on rural vitalization the percentage of party members as village chiefs shall be increased from 30 percent at present to 50 percent by 2020. (Eva Sternfeld)

More in Chinese under http://www.gov.cn/zhengce/-02/19/content_5366917.htm

For the Five-Year Plan on rural vitalization see also **Sino-German Food and Agriculture Update No. 3** and

http://english.gov.cn/policies/latest_releases/2018/09/26/content_281476319507892.htm

Full text in Chinese: http://www.gov.cn/zhengce/2018-09/26/content_5325534.htm

State Council on promotion of small farmers and modern agriculture

Shortly after the release of the Document No. 1, the State Council issued the more detailed "Opinions about the organic link between promotion of small farmers and modern agriculture development" with suggestions how modernization of agriculture and rural vitalization can be realized by involving small farmers and small farms. The measures are designed to raise small farmers' income, especially those living in remote and mountainous regions. It stresses the protection of small farmers' land rights. With the family farm cultivation programme small farmers are encouraged to expand the scale of their farms. Local governments are encouraged to support small farmers by subsidies and training to adopt advanced technologies and establish transparent traceable production procedures coherent with the national standards. Agricultural research institutions shall set up demonstration bases for advanced and applicable technologies for small farmers.

Small farmers production infrastructure such as irrigation canals, roads in villages etc. shall be improved, centralized facilities for storage and seedling raising shall be built and the disaster prevention shall be improved.

The paper also stresses the improvement of small farmers' organizations. Small farmers shall be encouraged to link up in farm partnerships and cooperatives to jointly purchase machinery and material and organize marketing of their products. The cooperatives are also encouraged to set up agricultural industries. Small farmers shall strive for the production of high-quality products, rural e-commerce and agri-tourism. Access to internet for small farmers shall be improved, this includes broadband access, coverage of big agricultural data, IoT and other technologies. Local governments are also encouraged to compensate small farmers for participation in ecological protection and development of green circular agriculture (with reduced inputs of agrochemicals).

Establishment of microfinance institutions and the inclusion of small farmers into agricultural insurances shall be supported, which includes crop insurance, livestock insurance, "vegetable basket" insurance and forest insurance.

More in Chinese: http://www.gov.cn/zhengce/2019-02/21/content_5367487.htm

China announces Food Safety Testing Plan

In January 2019 the State Administration for Market Regulation announced the launch of a food safety monitoring plan. It aims to collect more than 1.3 million samples for 259 kinds of food per year. Tests will be carried out by the central, provincial and city level bureaus of the market regulation departments. The announcement classifies the food and beverage items to be tested as well as the substances to be checked for. http://gkml.samr.gov.cn/nsjg/bgt/201902/t20190217_289802.html

The announcement classifies pork liver as "high risk" to be tested for growth-promoting beta agonists (such as clenbuterol and ractopamine) and more than a dozen antibiotics.

Meanwhile a report about an investigation of the Chinese Academy of Sciences on the wide-spread overuse and resistance against antibiotics in China has been shared in Chinese social media.

Seven ministries jointly released National Planning of Quality-Based Agricultural Development (2018-2022)

On 18 February 2019 seven Chinese ministries, i. e. the Ministry of Agriculture and Rural Affairs (MARA), the National Development and Reform Commission (NDRC), the Ministry of Science and Technology (MOST), Ministry of Finance (MOF), Ministry of

Commerce (MOFCOM), the State Administration for Market Regulation (SAMR), the State Food and Strategic Reserve Administration (SFSRA), jointly released the official document "National Planning of Quality-Based Agricultural Development (2018-2022)". For more information follow the link to our website: https://www.dcz-china.org/nachrichten-d/7-ministries-jointly-released-national-planning-of-quality-based-agricultural-development-2018-2022.html

MARA released document on the establishment of modern agriculture parks in 2019

On March 8, MARA published a call to establish 46 so-called modern agriculture parks in China. The call includes a list with criteria for evaluation and the number of parks per province.

More in Chinese:www.moa.gov.cn/govpublic/FZJHS/201903/t20190313_6173678.htm

Area of rotating cropland to be increased

MARA announced that the area of cropland destined for rotation or fallow land will be extended to 2 million ha in 2019. This measure should help remediate exhausted and polluted soils. In some areas the rotation between corn and soy bean is promoted. Farmers can join the programme voluntarily and will receive subsidies from the government. The rotation pilot programme started in 2016 and now covers pilot regions in Liaoning, Yunnan, Gansu, Heilongjiang, Jiangsu, Jiangxi as well as since this year 300,000 ha along the Yangzi River Valley.

More:

http://global.chinadaily.com.cn/a/201903/19/WS5c9042f4a3106c65c34ef565.html

MARA publishes a call for funding of projects to promote green circular high-quality agriculture

On March 26, MARA issued a call for proposals targeting green circular agriculture projects. The call will distribute about 18 million RMB per accepted project. Eligible for applications are projects such as fruit plantation-ponds-livestock, vegetable-ponds-livestock, tea-ponds-livestock, rice-fish (ducks) circular agriculture projects. These projects are expected to use biological pest control. At the same time also packaging, marketing and reduction of wastes will be taken into consideration. In 2019, ten provinces are in the focus of promoting circular agriculture: Shanxi, Jilin, Jiangsu, Jiangxi, Henan, Hubei, Hunan, Hainan, Sichuan and Ningxia. Each province is eligible to submit three proposals, every project can be funded with about 18 million RMB. Proposals had to be submitted by April 30, 2019.

China launches Fund for Natural Disaster Relief of Agricultural Sector

China has assigned 595 million RMB (77.7 million €) to combat negative effects of natural disasters upon agriculture such as droughts, blizzards, floods, landslides as well as pests and plant disease.

More:

https://www.sustainable-urbanisation.org/en/news/china-launches-fund-for-natural-disaster-relief-of-agricultural-sector

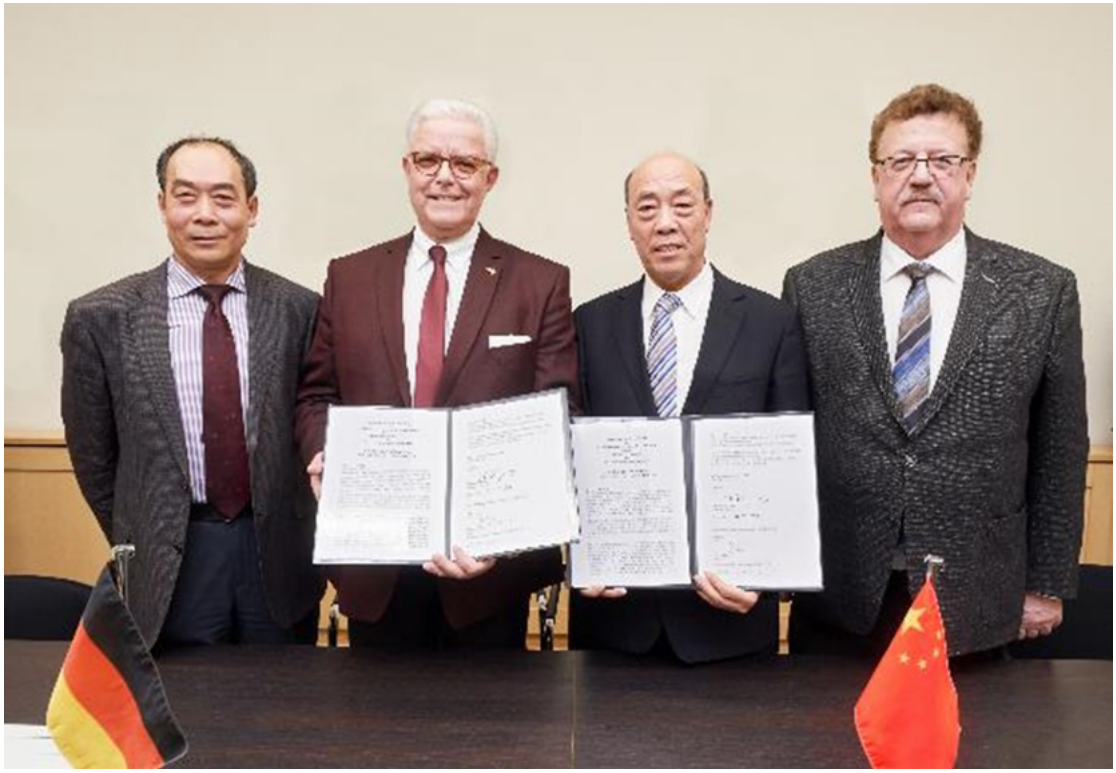
MoU signed between German Poultry Association and Chinese Broiler Alliance

During a recent visit of a delegation of the Chinese Broiler Alliance (CBA) in Germany a MoU was signed by Friedrich-Otto Ripke (German Poultry Association – Zentralverband der Deutschen Geflügelwirtschaft, ZDG) and Yin Chongwen (CBA). The signing ceremony was attended by the German parliamentary state secretary Hans-Joachim Fuchtel. The MoU is seen as a first step towards an intended veterinary agreement. This agreement would open the Chinese market for German poultry products such as chicken wings and feet. At the end of April, leading representatives of the German poultry industry will accompany Mr. Hans-Joachim Fuchtel on his visit to China.

More (in German): http://www.zdg-online.de/de/pressebereich/memorandum-understanding-wichtiger-schritt-auf-dem-weg-zu-einer-marktoffnung-chinas

African Swine Fever update

Recent Chinese statistics indicate that the African Swine Fever outbreak has a serious impact on China's swine production. According to these numbers China's pig herd dropped by 16.6 percent compared to February 2018 (https://www.reuters.com/article/us-china-pigs-inventory/china-pig-herd-falls-16-6-percent-in-feb-year-on-year-as-african-swine-fever-hits-idUSKCN1QW0RL). However, some provinces reported even higher landslide falls in pork production, for example Henan province counted a decline by 26 percent, Shandong by 41 percent and Jilin reported that production was even 50 percent below the comparison figure of the preceding year. The crisis already has serious implications on China's meat sector: According to Bloomberg, China recently made the largest purchase of pork in the recent two years. This is another indication that the country is preparing for a sharp drop in domestic production.



Source: ZDG

Until mid-March 117 outbreaks of ASF have been reported, with more than 950,000 animals culled. The disease meanwhile has crossed the border to Vietnam and in early April the virus made a big jump and travelled about 1400 km to Urumqi in China's far west Xinjiang Autonomous Region. Now all Chinese provinces but Tibet and Hainan have reported ASF cases. However, China's officially released numbers might only show the tip of the iceberg. While some months ago Hebei, the province neighboring to Beijing, seemed to be miraculously spared of ASF, the magazine Caixin featured a story at the end of February about a Hebei farmer blaming local authorities to have covered up an ASF outbreak on his farm where 15,000 pigs died. The farmer's message went viral through Chinese social media, and at the end of February MARA confirmed a case in Hebei as well.

Chinese consumers are alarmed after Sanquan Food, a leading frozen food producer, had to recall dumplings that had been tested positive to be contaminated with ASF. Because of the wide spread of ASF in China and obvious shortcomings in surveillance and reporting some international experts estimate that the impact on China's meat sector will be tremendous and that China's pork production may decline by as much as 30 percent. This tendency might bring a stronger demand for imported pork as well as a rise in demand for alternative meat varieties. Among all exporters to China, Germany ranked top with a market share of 19.1 percent and a yearly growth rate of 7.8 percent (ahead of Spain with 18.4, Canada 13.4, Brazil 12.1 and USA 7.2 percent). Concerning the export of offal Germany ranked third (with a market share of 14.0 %) next to Denmark and Spain. In Germany, the ASF crisis and rising demand from China helps to compensate for the decreasing domestic meat consumption. After many years of decline Germany in March experienced a price hike for pork so that within two weeks prices increased by 20 € per slaughtered pig. However, rising raw meat prices create problems for German small and medium-sized meat processing industries without licenses to export to China. http://www.spiegel.de/wirtschaft/unternehmen/afrikanische-schweinepest-chinesen-kaufen-deutsche-schweine-a-1260592.html

It already becomes obvious that ASF has the potential to turn into a game changer for animal husbandry in China, including a possible decrease in pork domestic production and stronger focus on transparency, animal welfare and environmental protection. It will also influence consumer demands. Also they might not necessarily reduce their meat consumption in total, but are likely to turn to chicken, beef and lamb. These changes were reflected by recent price hikes for chicken and beef meat.

https://www.pigprogress.net/Health/Articles/2019/3/ASF-China-Pork-supplies-expected-to-shrink-case-in-Sichuan-404542E/?cmpid=NLC|pigprogress_focus|2019-03-15|ASF_China:_Pork_supplies_expected_to_shrink;_case_in_Sichuan

https://thepigsite.com/articles/what-does-2019-hold-for-chinas-pork-market?dm_i=4P30,IV69,478RK2,26NEM,1

China's consumers like German food

Chinese consumers like German food, especially beer, German milk products and milk powder, pork, especially pig's trotters. They belief in the quality of German food. However, last year German food exports to China slightly decreased. Stefanie Schmitt from German Trade and Invest (GTAI) explains that this is related to difficult bureaucratic procedures, for example so far there is no bilateral veterinary agreement.

For more information please refer to Stefanie Schmitt's article (in German):

https://www.gtai.de/GTAI/Navigation/DE/Trade/Maerkte/suche,t=chinas-konsumenten-schaetzen-deutsche-lebensmittel,did=2227674.html?channel=alert_channel_gtai_1

China's food industry suffers from slow-down of the economy

According to German Trade and Invest (GTAI) the development of China's food sector is slowing down after many subsequent years of rapid growth. Compared to growth rates of 6.3 percent in 2017, growth rates in 2018 declined to "only" 6.1 percent. Young urban middle-class consumers striving for a high-quality life style and increasing the demand for high-quality premium products are seen as drivers for the still profitable market.

Article by Stefanie Schmitt (in German):
https://www.gtai.de/GTAI/Navigation/DE/Trade/Maerkte/suche,t=chinas-lebensmittelindustrie-spuert-konjunkturflaute,did=2227036.html?channel=alert_channel_gtai_1

Chinese consumers have increasingly higher requirements on food sector

According to German Trade and Invest (GTAI), Chinese consumers – along with rising incomes – not only buy more, but also buy products of higher quality. While in Germany often the label "free of" additives is a sign of quality, in China high-quality products are advertised as "good for" health, wellness etc. In recent years, especially fruit and milk products (yoghurt) have been in high demand, whereas the demand for sweets and chocolates has been stagnating. The ongoing African Swine Fever crisis has an impact on Chinese consumers' meat preferences, who are increasingly turning to beef and chicken as alternatives to pork (read also our update on ASF). Despite the rising demand for high quality products and a good reputation of food products "made in Germany", German food exports to China decreased by 4.6 percent (total volume 1.51 billion €). Reasons might be the quite complicated certification procedures. Full article (in German):

https://www.gtai.de/GTAI/Navigation/DE/Trade/Maerkte/Branchen/Branche-kompakt/branche-kompakt-ernaehrungswirtschaft,t=branche-kompakt-chinesen-stellen-hoehere-ansprueche-an-die-ernaehrungsbranche,did=2240990.html

DCZ Activities

24th Expert Group Meeting on Sino-German Agricultural Research Collaboration

On behalf of DCZ, Dr. Eva Sternfeld participated in the 24th Expert Meeting on Sino-German Agricultural Research Collaboration, which was held between February 26 and March 1, 2019 in Hangzhou. The collaboration between the science and research divisions of the agricultural ministries of the two countries was established in 1978 and since 1981 regular bi-annual meetings have been held. The successful collaboration resulted so far in the financial support of 550 bilateral projects in agricultural science, including funding of whole projects, workshops and conferences as well as travel grants.

Meeting at CNRRI (photo: Zhang Xian)

Laboratory at ZAAS, Institute for Quality Standards for Agricultural Products (photo: Sternfeld)

This year's delegation on the German side included Dr. Hartmut Stalb, Director for Research, Operational Coordination and Information Technology at BMEL, Dr. Ursula Monnerjahn-Karbach, Deputy Head of Division for Research and Innovation (BMEL), Mr. Siegfried Harrer, Head of Division International Cooperation and Global Food Security (Federal Agency for Agriculture and Food, BLE), Mr. Henning Knipschild, Division International Cooperation and Global Food Security (BLE), Sven Portius (Economic Section, German embassy). The Chinese delegation included Mr. Li Bo, Deputy Director General, Department of Science, Technology and Education (MARA), Mr. Chen Lijun, Department of International Cooperation (MARA), Dr. Zhang Zhenhua, Department of Science, Technology and Education (MARA), Dr. Zhang Huijie (Deputy DG, Department of International Cooperation, CAAS), Dr. Chen Tianjin (International Cooperation, CAAS), Tang Zhishao, Dr. Zhang Xian (FECC).

In addition to the expert meeting, which was held in the morning of 28 February at Zhejiang Academy of Agricultural Sciences (ZAAS), the event also included excursions and visits to research institutes and laboratories (China National Rice Research Institute CNRRI, ZAAS, and the Tea Research Institute of CAAS).

The excursions which were organized by CNRRI included visits to projects for circular bio-economy in Hangzhou's Nanxun district, such as an ecological rice-crayfish-crab farm, an ecological fish-sheep farm and a digitalized aquaculture farm. Furthermore, a visit of a model project for rural vitalization was organized.

Rice-crayfish farm, Nanxun county, Hangzhou, where crayfish are kept in the rice fields as natural predators for pests and producers of natural fertilizer. By this, the input of agrochemicals can be minimized. (photo: Sternfeld)

Sheep-fish farm in Nanxun county (photo: Sternfeld)

Dr. U. Monnerjahn, BMEL (photo: Sternfeld)

Dr. Jürgen Ritter, DCZ (photo: DCZ)

In Lu village in Anji county a cooperative of 18 family owned farms linked up with a tourism company as investor to develop the village as a destination for agri-tourism. The project, which is also sponsored by the government functions at the same time as a training base of the Communist Party for modern agriculture and rural vitalization.

VDMA Agricultural Machinery China Management Meeting held in Qingdao

On March 5, 2019, the German Mechanical Engineering Industry Association (VDMA) China Representative Office hosted an Agricultural Machinery China Management Meeting (CMM) in Qingdao, Shandong Province. Altogether, 41 participants representing 21 international agricultural machinery companies from Germany, France, the Netherlands, Italy, Denmark, etc., attended the one-day meeting. At the invitation of the chief representative of VDMA in China, Dr. Jürgen Ritter, German Managing Director of the Sino-German Agricultural Centre (DCZ), and Prof. Liu Yonggong, DCZ advisor for agri-business cooperation and professor at the China Agricultural University, attended the meeting and presented the work of the DCZ.

More at https://www.dcz-china.org/veranstaltung-d-en/vdma-agricultural-machinery-china-management-meeting-held-in-qingdao.html

Plant Variety Protection Workshop

DCZ supported a workshop on plant variety protection which was jointly organized by the China National Seed Trade Association (CNSTA), the Dutch Breeders' Association (PLANTUM) and the German Breeders' Association (BDP) on 18th March 2019 (see also cover story by Dieter Rücker).

Photo: DCZ

China Seed Congress 2019

On Sunday, 31st March, and Monday, 1st April, the "2019 China Seed Congress" took place in the Beijing International Convention Center. It had been organized by the China National Seed Association (CNSA), Sino-Chem Agriculture, China National Agro-chemical, Syngenta and Winall Hi-Tech. Nearly 1,200 interested people working in the seed sector participated in this event. At the invitation by CNSA, Dr. Jürgen Ritter, German Managing Director of the Sino-German Agricultural Centre (DCZ), and Ms. Karin Tränkner, senior adviser for the Sino-German agricultural policy dialogue, attended the congress on Sunday.

The opening speech was held by the Vice Minister of MARA, Mr. Zhang Taolin. The Chinese Ministry of Agriculture and Rural Affairs denotes the set-up of a modern seed industry as crucial factor in its strategic supply side reform. The seed industry with its scientific institutions and private researchers is the key driver for Chinas "Green Revolution" and poverty alleviation efforts.

Speeches were delivered from highly qualified national and international experts, starting with keynotes by Mr. Michael Keller, Secretary-General of ISF, Mr. Qin Hengde, President of SinoChem Agriculture, and Mr. Zhang Yanqiu, Director General of the Division of Seed Management by MARA and President of CNSA. Mr. Zhang Yanqiu called the year 2018 an important year in China's seed history as 20,000 ha of formerly protected areas will be converted into seed production zones with a national seed breeding research centre. China is on the way to develop a "Silicon Valley" in seed innovations where international companies will have access. Also on the agenda is a new National Germ Plasm Bank with the worldwide largest capacity.

A great part of the morning session was dedicated to the launch ceremony of "Ten most outstanding persons in Chinas seed industry" and the award of certificates for enterprises meeting the seed industry AAA credit-rating in 2018, hosted by CNSA's Vice President Ms. Ma Shuping and Li Wei, deputy editor in chief of Farmer's Daily. 118 enterprises were rated with triple A, 167 with AA, and 85 enterprises got an A rate.

According to Mr. Jiang Xiexin, Vice President of CNSA, today's consumers in China ask for quality and are willing to pay above-average prices. Also low-income people want to have good quality in their daily food. The seed industry takes this demand into account and seeks to improve food quality by using hybrid seeds. In this context, a close cooperation between different scientific sectors (biologists, researchers) is essential. Mr. Wan Jianmin, Vice President of CAAS, presented the latest scientific achievements in China's seed industry with a focus on research on rice.

The congress was completed by the speech of Ms. Wu Xiaoling, Deputy Manager of the Seed Management Division of MARA, who informed the audience about the latest trends in China's seed sector. Changes in China's seed industry occurred after the 2016 reform when the number of seed companies increased. Whereas the rice and maize seed production decreased, the yield of melons and vegetables increased steadily. The degree of modernization in the seed sector stays moderate, but the innovative commercial level must be better, since it moves too slowly.

According to Ms. Wu, the market potential especially for potatoes, seed sprouts and grafted tomatoes is huge, and also the demand for organic varieties is continuously rising, with organic varieties cultivated by machinery being available in limited quantities only. Finally, the Chinese approval system improved due to the shift from the supervision of individual seed companies to IP protection regulations;

additionally, a third-party seed-testing agency will provide efficient services.
(Karin Tränkner)

More News from Sino-German Agricultural Cooperation

China-Germany Biomass Research Center Technical Tour to Anhui province

In January 2019, a technical tour led across various agricultural and animal husbandry institutions in Anhui province in China. Prof. Dr. Walter Stinner, Director of the China-Germany Biomass Research Center in Anhui, and his colleague Prof. Dr. Yue Mei met the researchers Buqing Li and Dr. Xiaoyan Guo from the Engineering Institute of Anhui Academy of Agricultural Sciences as well as leaders of the Animal Husbandry Bureau (in Yingshang), the Agricultural Commission (Huainan) and representatives from the Gudian township (Fengtai county). During the two -day tour from January 19-20, 2019, enterprises specialized in livestock & poultry breeding and in biomass treatment have been visited. The aim of this technical tour was to evaluate the scale of livestock and poultry breeding and discuss new and improved treatment methods for animal manure and straw.

At different visited places straw is currently treated by composting techniques and processed into fertilizer. Biogas utilisation options have been discussed.

Another highlight was the visit to the pig manure digestion system at Fengtai Zhengxiang agricultural science and technology development Co. LTD, who are practicing a very innovative digestate application as organic fertilizer in water plant cultivation systems such as organic water celery or aquatic flowers, or even ecocycle models combining for example cultures of swamp cabbage with water celery and loach breeding.

At all sites, possible options for future cooperation and common follow-up projects for the improved utilisation of agricultural residues have been discussed.

By Britt Schumacher - DBFZ. The author can be contacted at britt.Schumacher@dbfz.de

Digestate application with ecocycle model combining the cultures of swamp cabbage, water celery and loach breeding (photo: DBFZ)

Application to organic water celery (photo: DBFZ)

Reviews of Publications

Organic Food and Farming in China – Top-Down and Bottom-up Ecological Initiatives by Steffanie Scott, Zhenzhong Si, Theresa Schumilas and Aijuan Chen. Routledge 2018

This book provides a comprehensive and well researched insight into initiatives promoting China's ecological farming sector. It explores how not only formal top-down approaches but also grass-root (bottom-up) initiatives such as alternative farmers' networks and community supported agriculture (CSA) contributed to the development.

The publication reflects many years of research by the Canadian professor Steffanie Scott and her PhD students Zhenzhong Si, Theresa Schumilias and Aijuan Chen. Their findings are based on 127 qualitative interviews conducted with farmers, officials and scientists in 13 provinces, farm visits and attendance of conferences as well as literature research and analysis of microblogs and websites.

The book starts with an outline of the development of China's ecological farming sector including industrialization of agriculture, national policies focused on food security, changing patterns of food consumption and growing concerns about food safety. It describes the transition of China's food system from a system based on rationing to the world's largest grocery retail market. Along with an increased agricultural production and a higher variety of products food consumption pattern changed, characterized by an increased consumption of oil and animal sourced food, sugar sweetened beverages, grains and legumes as well as an increased consumption of food away from home.

The following chapters look at the evolution of Chinese ecological agriculture and various agribusiness models from top-down and market driven approaches to grass-root initiatives. The authors argue that in the early years beginning from the 1980s-90s the emergence of ecological agriculture was closely linked to the environmental crisis caused by the so-called "green revolution" featured by a massive input of chemical fertilizers, pesticides and herbicides. At that time top-down approaches prevailed. In order to counter negative environmental impacts, the first ecological agriculture projects had been set up at environmental research institutes, and by 1990 already 1200 so-called "ecological agriculture villages" had been established. Since the 1990s China has introduced official standards for the so-called "green food" and later in 2005 approved a national standard for organic food. Since 2015 the "National Sustainable Agriculture Plan (2015-2030) determines the official guideline for promoting sustainable agriculture and sets targets for reducing the high inputs of agro-chemicals. While in the early years organic farming was promoted for the export market, more and more press reports about environmental issues and food safety concerns helped to create also a domestic market.

Whereas in the beginning the market was dominated by contract farming arrangements by trading companies (who could afford the costs for certification and marketing), in recent years also other models such as independent farmers' cooperatives are becoming more common. Besides certified farms, also farms emerge that instead of certification try to build consumers' trust by providing information about their farms and direct marketing. According to estimates, about 500 CSA farms have been established all over China.

Beijing farmers' market, Terese from Gods Grace Garden owns 12 cows. (photos: Sternfeld)

These are farms which according to the authors' definition are an *"initiative in which an operator sells products from farmland that they themselves manage, to an established group of buyers who signed up to be members of the farm*". Most of these farms do not strive to obtain the expensive official organic certification but try to develop close and trustful relationships to their customers by direct marketing and inviting them to farm visits. In several large cities so-called farmers' markets have been established where farm operators directly sell their produce to better off middle-class customers. Other initiatives are "buying clubs" and small garden plots rented by urban citizens for recreational farming. The authors point out that in contrast to western initiatives Chinese alternative farmers' networks were not established to oppose the globalized food system, but rather were promoted by consumers' interest in "healthy food".

The authors even suggest that China's food quality crisis is one of the major drivers for this nascent civil society movement.

During field visits to CSA farms the researchers observed that some traditional organic farming practices such as applying organic fertilizer produced from composting vegetable waste and human and animal manure coexist with modern farming practices. However, other traditional practices such as intercropping and crop rotation, traditional pest management are seldom applied. Explanations might be that operators are often young urban inexperienced farm operators.

A final chapter looks at the new rural reconstruction movement, an intellectual and social movement seeing its roots in an earlier movement led by social activists who in the 1920s-30s established more than 600 organizations to educate peasants and improve living conditions on the countryside. The new movement started in the 2000s and has set up several centres and projects nationwide. In 2017, the New Rural Reconstruction Movement linked up with Slow Food International to promote the establishment of "Slow Villages" in China.

In their conclusions the authors among others identify the following challenges for China's organic agriculture sector:

1. *Small farmers are largely excluded from organic certification.*
2. *The value of traditional agroecological practices is overlooked.*
3. *Organic and ecologically produced foods are unaffordable for most consumers.*
4. *Research on organic production techniques in China is quite limited. (p.199)*

The book is highly recommended for those who are interested in learning more about China's alternative ecological farming sector. To keep updated one can follow the authors on the Linkedin group "China's changing food system". (Review by Eva Sternfeld)

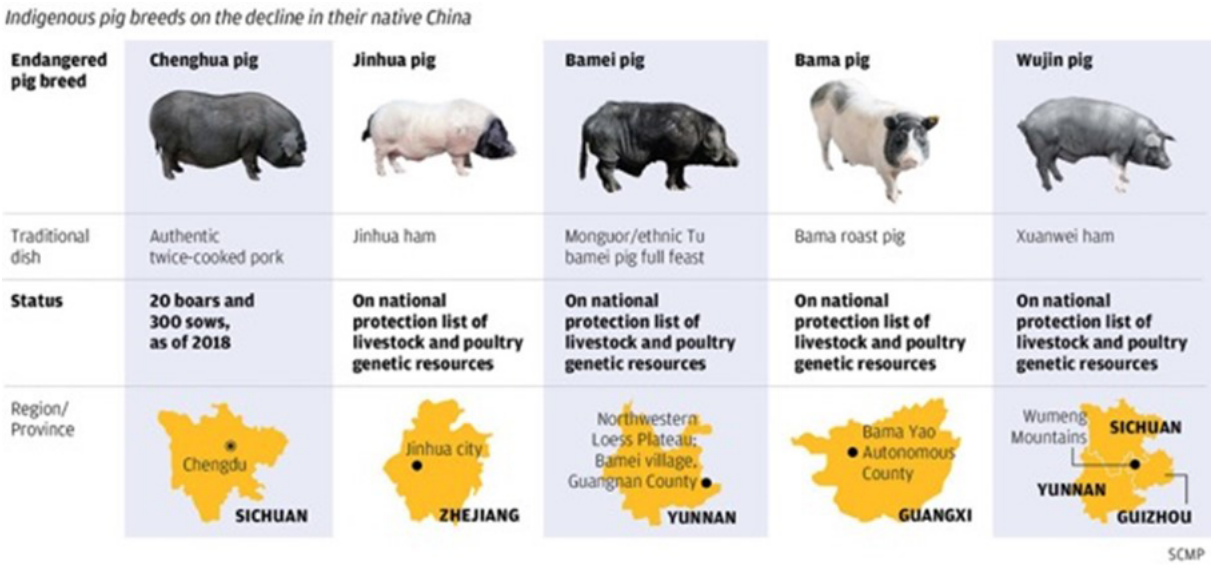
Reforming the Humble Pig. Pig, Pork and Contemporary China by Mindi Schneider, Roel Stercks, Martina Siebert and Dagmar Schäfer (ed.): Animals through Chinese History. Earliest Times to 1911. Cambridge University Press, p. 233-243

https://www.cambridge.org/core/books/animals-through-chinese-history/reforming-the-humble-pig/EE324B761645E0BB2AE9DC4B3DDE6DF0

Jia 家, the Chinese character for family/ house, a pictogram featuring a pig under a roof, can be read as an expression for the traditional close relationship between humans and pigs in Chinese society. The pig actually was an integrated part of the family, important as a recycler for leftover food waste and producer of fertilizer and finally during festive seasons also as a meat supplier. In modern times, as more and more people move to the cities and along with rising incomes and growing demand for meat, pig farming became more and more industrialised and pigs became mere meat machines. Today China produces and consumes half of the world's pork meat. Mindi Schneider's essay takes a closer look at the shifting nature of pig and pork production in China and by this is a helpful resource to understand the background and the dimension of China's present African Swine Fever crisis.

The first national survey on indigenous livestock, conducted by the Chinese Academy of Agricultural Sciences in 1960, identified between Heilongjiang and Tibet more than hundred different Chinese pig breeds, each of them well adapted to local climate and feed resource conditions. These native pig varieties however do not play any role in the modern industrialised pork boom. In the early 1990s the ministry of agriculture has begun to import foreign breeds, namely Duroc, Landrace and Yorkshire. These foreign breeds and companies selling pig genetics dominate the modern Chinese pork production. *"The knowledge and practice of animal husbandry and people-pig interaction in adapting pigs to local ecological conditions"* writes Schneider, *"has largely been replaced by interactions between scientists, agribusiness executives, government officials, breeding farm workers and the commodity form."*

Schneider shows how in the reform era three different types of pig farming have been established, namely 1) the small-scale family owned backyard farms raising 1 to 50 pigs with traditional methods, 2) the so called "specialised" mid-scale farms raising between 50 to 1000 pigs and 3) modern large-scale farms raising more than 1000 pigs. In recent years a rapid decline of small-scale pig farming has been observed. On the rise is the wholly industrialised so-called CAFO (Confined Animal Feeding Operation), which relies on breeds specially bred for confine-



Source: South China Morning Post

ment and commercial feed and additives. Industrialisation of pork production consequently led to the emergence of powerful meat companies such as the WH group, the world's largest meat processing company. Only in recent years environmental quality and food safety issues related to large-scale pig farms and meat production have increasingly come into focus. Of concern is especially water pollution caused by manure released from industrial livestock facilities into water bodies and antibiotics and hormones from feed that contaminate meat.

Along with production also the habits of meat consumption have changed. Whereas in traditional China pork was a rare treat for the majority of people, it is nowadays a quite affordable, staple everyday diet. Whereas traditional pork was fatty, lean pork is preferred in modern China. Changing diets and lifestyle have also an impact on public health, a shift from the "traditional diseases of poverty" to "diseases of affluence" can be observed or as Schneider put it *"while China's pork has become leaner, China's people are becoming fatter"*. (Review by Eva Sternfeld)

Infectious Dose of African Swine Fever Virus When Consumed Naturally in Liquid or Feed by Niederwerder MC, Stoian AMM, Rowland RRR, Dritz SS, Petrovan V, Constance LA, et al. Emerg Infect Dis. 2019, volume 25. https://doi.org/10.3201/eid2505.181495

The findings of a research team of Kansas State University provide some explanation for the fast spread of ASF in China. In their peer-reviewed article the authors conclude that the ASF virus can easily be transmitted by water as well as by feed. They show in their study that an extremely low level of virus was required to cause an infection.

More at https://wwwnc.cdc.gov/eid/article/25/5/18-1495_article

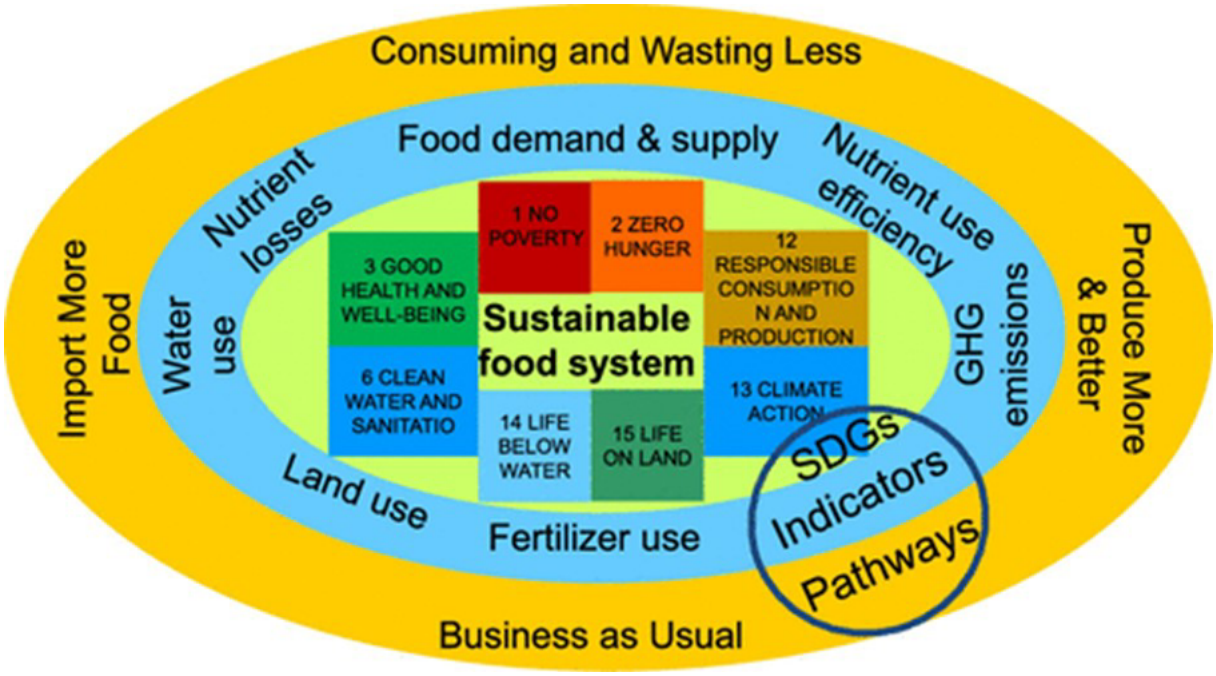
Food and the Megacity: How urbanization and technology are changing the way China eats. https://space10.io/food-and-the-megacity/

This post explores emerging food trends in China's megacities and how they may impact the global food market. At present China has six megacities and 124 cities with more than one million inhabitants. The Chinese government promotes so-called mega-regions and city clusters such as the Pearl River Delta, the Yangzi River Delta and the Jingjinji (Region Cluster of Beijing, Tianjin and Hebei province). Along with urbanization rapid digitalization is identified as an issue impacting Chinese food habits. By June 2018 already 98 percent of China's population could access the internet via mobile phones, and mobile payment is widely spread in Chinese cities. This helped to promote the food delivery market and large online retailers such as Meituan-Dianping. Growing income of urbanites changes people's diets. Annual meat consumption of an average Chinese grew from 13 kg (in 1982) to 63 kg (in 2018). China is now the world's third largest producer of beef, second biggest producer of poultry and world leading producer of pork. The authors identify 12 food trends that result from increasing prosperity, urbanization and digitalization, such as

- Getting food delivered is the new normal. Food delivery is changing what, where and when people eat;
- Decline of informal street food due to rapid gentrification;
- Rise of "dark kitchens" and delivery hubs. Restaurants that only prepare food for delivery;
- Small businesses go into e-commerce;
- Shopping malls as restaurant and food delivery centers;
- Innovative and experimental retail opportunities – new concepts of stores, restaurants and food spaces;
- Fully automated and cashier-less shops;
- Home cooking as a special occasion – do it yourself or hire a cook via app;
- Influencer-driven apps and platforms determine what dishes are trendy;
- Social media help to launch culinary celebrities, new flavours and recipes;
- Internet helps to build bridges between rural and urban populations, making food production more transparent;
- Plant factories, indoor or vertical farms for vegetable production.

Exploring Future Food Provision Scenarios for China. By Lin Ma, Zhaohai Bai, Wenqi Ma, Mengchu Guo Rongfeng Jiang, Junguo Liu, Oene Oenema, Gerard L. Velthof, Andrew P. Whitmore, John Crawford, Achim Dobermann, Marie Schwoob and Fusuo Zhang. *Environ. Sci. Technol.,* 2019, 53 (3), pp 1385-1393

Forecasts in a Business As Usual (BAU) scenario indicate for China increases in animal food consumption and increased shortages of land and water needed for food production. At the same time greenhouse gases (GHG) associated with China's food production could increase up to 42 % of global emission at the level of 2010. The authors have developed three scenarios besides the BAU, namely "produce more and better food", "consume and waste less food" and "import more food" and analyzed them for their contributions to the sustainable development goals (SDGs). Their findings suggest that under the three scenarios a decrease of land and water demand as well as GHG could be achieved.



Graph by Lin Ma et al.

The authors argue that a combination of the first two pathways (produce more and better food, consume less and avoid waste) would be most effective, while importing food would externalize the negative impacts to other countries.

More at https://pubs.acs.org/doi/ipdf/10.1021/acs.est.8b04375

Call for Proposals

German Federal Environment Ministry launches call for project ideas for global climate action and biodiversity

The German Federal Environment Ministry has launched a call for project ideas on climate and biodiversity in developing and emerging economies. The call is funded by the International Climate Initiative (IKI). Deadline for submissions is 18 July 2019 via the IKI online platform. Eligible applicants include NGOs, business enterprises, federal implementing agencies, universities, higher education and research institutes in Germany and abroad as well as international and multilateral organisations.

For more information please refer to: https://www.bmu.de/en/pressrelease/federal-environment-ministry-launches-call-for-project-ideas-for-global-climate-action-and-biodivers/

Calendar - Upcoming Events

Date	Location	Event	Contact
		April 2019	
29	Beijing, Yanqing District	Opening **International Horticulture Expo Beijing** (until October)	http://www.horti-expo2019.org/
		May	
14-16	Shanghai	**SIAL** Asia's largest Food Innovation Exhibition	http://www.sialchina.com/
18-19	Beijing	Beijing International Urban Agricultural S&T Festival	FUTONG China Agricultural University
		June	
3-5	Nice, France	**ISF World Seed Congress 2019**	http:// www.worldseedcongress.com/2019/
6-8	Shenzhen	**PAG Asia 2019** Plant and Animal Genome Conference	www.intlpagasia.org/2019/index.php/en/
24-26	Berlin	**eCommerce of Food** International Conference on Trends and Official Control	www.bvl.bund.de/eCommerce2019
		July	
1-4	Beijing	**Agribenchmark Pig/Inter PIG conference**	CAAS Thünen
		September	
3	Hong Kong	**12th International FRUTIC Symposium 2019:** Innovations in Pre- and Postharvest Supply Chain of Fresh Produce	https://frutic.atb-potsdam.de
16-19	Berlin	**15th International Rapeseed Congress**	https://www.irc2019-berlin.com/
19-21	Qingdao	**Asia Agro-Food Expo 2019** VIV Qingdao	VNU Exhibitions Asia http://www.vivchina.nl
19-21	Qingdao	**EuroTier China**	DLG www.dlg-messen.de/ expo/eurotier-china/?L=1#!/
		October	
14-18	Hanoi, Vietnam	**2019 International Conference on Chinese Food Culture** – Cross-Cultural Interaction and Chinese Foodways in Southeast Asia. Vietnam National Institute of Culture and Arts Stories	http:// foodconference2019.fcdc.org.tw/ enaspx/default.aspx
19-21	Zhengzhou	**Leman China Swine Conference**	http://en.lemanchina.com
30-Nov1	Qingdao	**CIAME - China International Agricultural Machinery Fair**	
		November	
10-16	Hanover, Germany	**Agritechnica –** world leading trade fair for agricultural technology	https://www.agritechnica.com/en/
12-14	Shanghai	**International Meat Industry Exhibition**	www.meatexpo.com.cn
20-22	Beijing	**World of Food**	www.anu-foodchina.cn
18-24	Beijing	**Sino-German Agricultural Week**	www.dcz-china.org

Imprint

This issue was compiled by the international DCZ team. For enquiries and subscription please send an email to info-dcz@iakleipzig.de

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

Address: Room 724-727, Zhong Ou Hotel, 55 Nongzhang Beilu, Chaoyang District, 100125 Beijing PR China

地 址：北京市朝阳区农展北路55号中欧宾馆724室
（麦子店街，近盛福大厦）
邮 编：100125
电 话：+86（0）10–6500 0958

With support from

by decision of the
German Bundestag