주제-02

Present status, challenges and future perspective of crop production in China

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1. Present status of crop production in China

China is one of the largest agricultural Countries and had a long history in crop production. There are about 113 Million ha of arable lands in China for grain production and the total output is 671.9 Million tons in 2017 with the average yield level 5506.2 Kg per hectare. Table 1 show you the total output of grains, populations and the grains per capita in average from 2007 to 2017 in China. The data indicated that the grains production in China increasing sustainably in past decade. The total output of grains reached 500 Million Tons in 2007 again after 10 years of 1996 (504.54 Million tons) and climb upward to the 600 Million Tons in 2013. Similarly, grains per capita reached 400 Kg again in 2010 after 15 years of 1996 (412.2 kg).

Table 1. Total output of grains, populations and grains per capita in China

Year	Total output (Mt)	Increase rate (%)	Populations (Million)	Increase rate(%0	Grains per capita (Kg)
2007	501.60		1321.29		379.6
2008	528.71	5.11	1328.02	0.51	398.0
2009	530.82	0.44	1334.74	0.50	397.7
2010	546.48	2.85	1341.00	0.47	407.5
2011	571.21	4.34	1347.35	0.47	424.0
2012	589.57	3.20	1354.04	0.49	435.4
2013	601.94	2.10	1360.72	0.49	442.4
2014	607.03	0.80	1367.82	0.52	443.8
2015	621.44	2.40	1374.62	0.50	452.1
2016	616.24	-0.80	1382.71	0.59	445.7
2017	617.91	0.30	1390.08	0.53	444.5

Table 2 show the sowing area, yield level and total output of main cereals, legumes, potato and sweet potato in 2016 and 2017. The data show that the corn is the first cereal in China followed by rice and wheat. The first place of rice was taken by corn which ranked no. 3 before.

Table 2. Sowing area, yield and total output of main crops in China

	2016			2017		
	Sowing area (Mh)	Yield (Kg/ha)	Total output (Mt)	Sowing area (Mh)	Yield (Kg/ha)	Total output (Mt)
Grains	113.0282	5452.1	616.239	112.2196	5506.2	617.907
Corn	36.7597	5972.7	219.554	35.4452	6090.8	215.891
Rice	30.1624	6860.7	206.934	30.1760	6911.5	208.560
Wheat	24.1865	5327.4	128.850	23.9875	5410.1	129.774
Legumes	9.7105	1781.0	17.294	10.3520	1851.7	19.169
Potatos	8.9469	3775.5	33.779	8.9373	3825.4	34.189

The great achievement and advancement of crop production in China were strongly supported by scientific research on crop sciences, including crop genomics, crop genetics and breeding as well as development of crop cultivation technology. For several decades, Chinese crop science researches have been chasing high-yield crop varieties as their major task, and great progress have been made on main cereal crops, specially on hybrid rice, super rice and super green rice. To date, the total number of registered super rice cultivars reached 131, among them 10 was newly registered in 2018. The crop cultivation and farming system has also achieved remarkable advancements in many aspects, such as crop development regulation and related new techniques, the optimization of planting pattern and so on, efficiently supported the improvement of the productivity of crops.

2. Challenges and future perspective of crop production in China

Even astonishing progress has been achieved if crop production in China, but the food security is still in tightly balance and the future crop production is threatened by a growing population (about 8 Million net increase per year in population), loss of arable land to urban development (the loss of farmland caused by rapid industrialization and urbanization is still worrisome), Labor shortage (More and more young people leaving countryside to city) and small scale of farm for crop production, limited water resources (waters per capita only one third of the world average), climate change, environment protection and the human demand for high quality crop products.

The Chinese crop production in the new era is request two-side fighting, in one side to produce enough quantity of grains to feed the increasing population and, another side, to produce better quality of crop products to meet the improving living standards of human and their demand on high-quality and value-added food products.

The crop production in China was high-input and labor consumed in the past. Along with the development of Chinese economics and the social modernization, the crop production is request not only to increasing the productivity of agriculture, but also reduced the input, that means 5 saving (saving water, saving fertilizer, saving pesticides, saving labor and saving energy) crop production. For increasing productivity, beside the high yield and high quality crop varieties, the farm scale need appropriate enlargement, from small scale to moderate scale.

There are some key words which will guiding and annotate the future perspective of crop production in China.

GREEN: China advocates green development as its long-term goal. Green for crop production means producing safe crop products and the process of production is ecologically and environmental friendly. Green for crop varieties means the new varieties with traits of resistance to diseases and insects, tolerance to drought and stress, nutrient efficiency, reduce the use of pesticides, fertilizers and water but still ensure high quality and yield, leading to resource-efficient and environmental friendly crops.

QUALITY: The crop products should be high quality to meet the demands for nutritional quality, addressing functional components that improve human health and nutritional status. Quality also means meet the demands of diversity end products.

EFFICIENCY: The crop production should also consider the needs arising from High-input, low-efficient, labor intensive transforming to low-input, high-efficient and modern mechanized agriculture. Same as mentioned above, we need saving water, saving fertilizer, saving pesticides, saving labor and saving energy in crop production.

Short Introduction to China Crop Science Society:
The Crop Science Society of China (CSSC) was established in December 1961 and is currently affiliated to Institute of Crop Sciences, Chinese Academy of Agricultural Sciences (CAAS). As an academic society established under the approval of Ministry of Civil Affairs, CSSC is a legally registered, academic, nation-wide non-profit organization that is voluntarily formed by scientists and institutions in the field of crop sciences.
CSSC is actively participates in the development of the national innovation system and takes as its principle responsibilities as a hub to promote academic exchanges and independent innovation among agriculture scientists.
After more than 50 years of arduous effort, CSSC is now constituted of 18 specialized committees and sub-committees and 32 provincial societies in 32 provinces, autonomous regions, and directly-governed municipalities, with a total of 43 institutional members and over 20,000 individual members.

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