

China's Agricultural Machinery Industry: A Global Perspective

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China's agricultural and rural development has entered a new stage. The industry has started to feedback support to agriculture. The agriculture development has received systematic policy support. International relations and cooperation of the industry has entered an opening-up stage. The product supply and demand has entered the new stage of "tight balance". Scaled, organized and socialized production is the new characteristic of the production mode. The production input has become more technology and capital intensive. And the contribution of non-agricultural sectors to farmers' income has increased drastically.

The new trend of agricultural and rural area development in china can be seen from the following perspectives: 1) use macro-management, such as urbanization to solve the "San Nong" problems (i.e. problems of rural areas, agriculture and farmers; 2) the

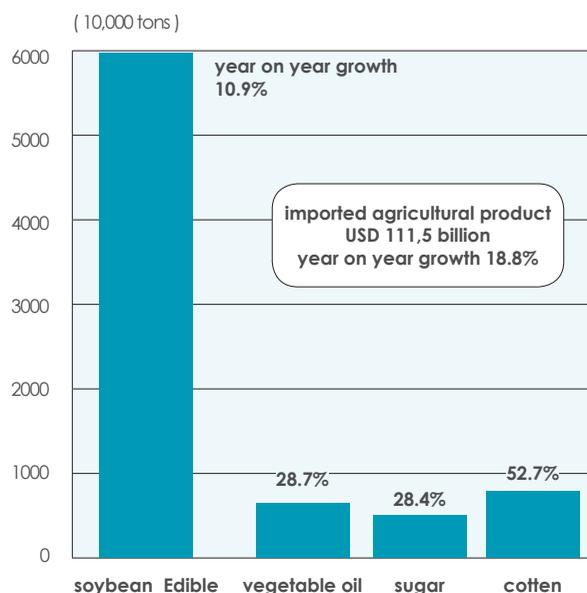
policies that strengthen the agriculture and benefit the farmers will be promoted and extended; 3) the demand and quality of agricultural products will be improved continuously; 4) profitability of agricultural production is still limited; 5) the number of agricultural and rural labor force will continue to decline; 6) the scale of agricultural production will continue to increase; 7) the agricultural production management system will gradually improve; 8) the influence of natural disasters and environmental pollution on agriculture will continue; and 9) the proportion of farmers doing part-time work in other industries and non-agricultural income will continue to increase.

China's agriculture is facing three major challenges. First of all, the next eight years is crucial to the achievement of goal to build a "Xiao Kang" (a better)

society. “San Nong” problems are crucial to the progress towards this goal. The second challenge is to ensure the effective supply of food and other major agricultural products against the backdrop of rapid economic growth, rapid urbanization, and faster progress towards the goal of building “Xiao Kang” society. The third challenge is who will do and how to do farming work after more than 260 million young people move to urban areas and work for non-agricultural sectors.

The primary issue of agricultural development is to provide food security. Despite of the increasing grain harvest every year, large gaps still exist in soybean and some agricultural products supply. The current food self-sufficiency rate is 90% with 10% supply gap, while the land productivity gap has reached 20%. It becomes more and more difficult to increase food production.

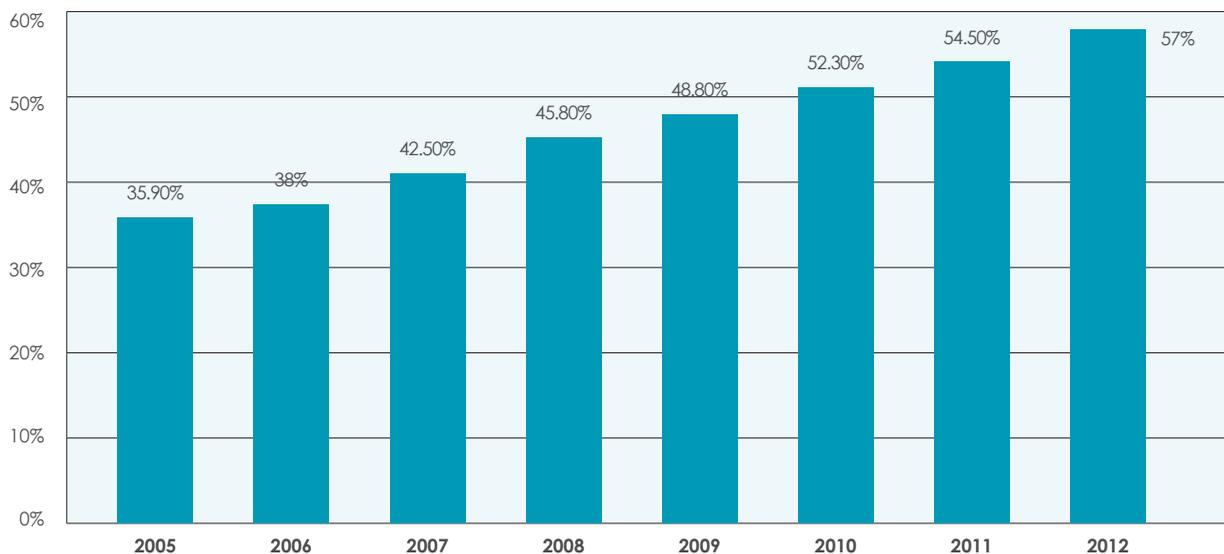
In 2011, China became the world biggest importer of agricultural products.



Agricultural product import in 2012

An emerging problem facing agricultural development is who will do and how to do the farming work. Firstly, the number of rural labor is shrinking. The current total of migrant worker is about 260 million. Every year, 9 million to 10 million people move away from rural areas. The number of farmers, especially young peasants, sharply decline. The countryside is losing labor force. Secondly, the structure of rural labor is losing balance. The average age of people living in countryside is about 50 with big proportion of women and children. Thirdly, the education level of the rural population is low. 70% of the population only has primary school education or junior middle school education. Fourthly, successors of agricultural labour are lacking. The number of high school graduates studying agriculture-related subjects is shrinking. Obviously, the new generation labor force is moving away from agricultural sector.

In the circumstances of the new trends of agricultural and rural development, agricultural mechanization has made significant progress in China. Firstly, agricultural mechanization has entered a new stage. The comprehensive agricultural mechanization rate has exceeded 57%. The mode of agricultural production has leaped from human and animal power to machinery power. Agricultural mechanization has moved from major production procedures to the whole process mechanization, and further to full mechanization in all agricultural sectors. The comprehensive agricultural mechanization rates from 2005 to 2012 are showed below:



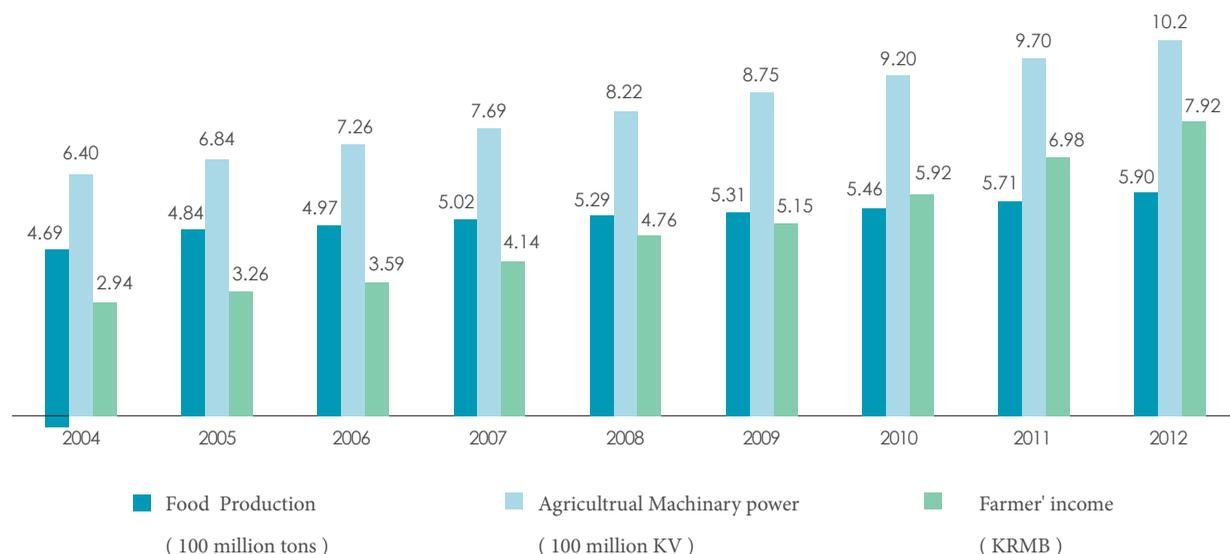
Secondly, the new system of agricultural operation has been established. In the new system, agricultural co-ops play a leading role, large agricultural machinery household is the main force, farmers using agricultural machinery are the basis, and the agricultural intermediary organizations are linkages. The rapid development of agricultural co-ops, has effectively improved the organization of agricultural production, promoted the transfer of rural labor force, and enhanced integrated application of agricultural technology. It has facilitated cost reduction, efficiency improvement, and scale operation of agriculture. It has become the highlight in the process of agricultural mechanization development.

Thirdly, integration of agricultural machinery and agronomy has been enhanced. Efforts are oriented not only on machinery's adaptability to local agronomic requirements, but also intensifying R&D of agronomy via developing new varieties, and new agronomic techniques so to create favorable conditions for the mechanized operation.

Fourthly, agricultural science and technology has achieved rapid progress. R&D on agricultural mechanization technology and equipment has been strengthened. Some "bottleneck" technology and integration issues are resolved. Large horsepower tractor development has seen significant progress. Rice planting and harvesting machinery equipment has matured basically. Significant progress has been made in equipment innovation, e.g. equipment of rape harvest, sugarcane harvest, forage harvest, and water saving irrigation equipment.

In addition, agricultural mechanization has played important role in ensuring food security. It is crucial of agricultural machinery to "maintain stable farming land,

improve yield, catch season, and prevent disaster” in agricultural production. It has provided strong support to the nine-year continuous growth of food production and farmers’ income, which could be illustrated clearly by the following diagram:



Meeting the development requirements of industrialization, informatization, urbanization, agricultural modernization, the overall goals of agricultural mechanization include, by 2020, the comprehensive mechanization rate reaches 70%; the main grain crops realize whole-process mechanization in basic; great progress made in mechanization of the production of main economic crop and mechanization of agricultural facilities; advance mechanization in fruit processing industry, animal husbandry, fishery and primary processing of agricultural products.

The strategic task of agricultural mechanization is to ensure food security and increase the productivity and efficiency of agriculture, against the backdrop of increasing population and food consumption. The development requires the agricultural mechanization to advance from the intermediate to advanced stage, promote the whole-process mechanization of main grain crop production and full mechanization in the production of agriculture, animal husbandry and fishery. To meet the new market demand and

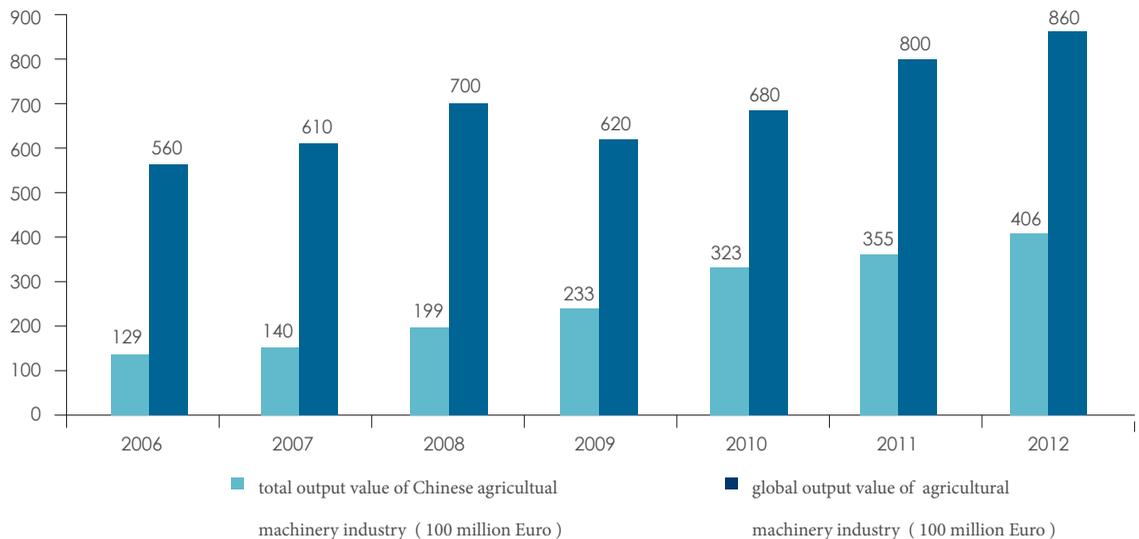
needs of the new agricultural operation and the service entity, agricultural machinery technology should be upgraded to mid-to-high-end stage. For meeting the innovation needs, integration of agricultural mechanization and agronomy, agricultural mechanization and informatization, engineering technology and biotechnology should be strengthened.

From a global perspective, Chinese agricultural machinery industry has the following characteristics:

- 1) both strengths and weakness exist; 2) began to integrate into global market, and to participate in global resource allocation; 3) the market is open, and international companies are occupying the high-end market; and 4) technology must be upgraded in order to transfer the industry from big to strong.

Global agricultural machinery industry has seen a trend of steady growth. In 2012, the global total output value reached 86 billion Euros. In the same year in China, it reached 338, 24 billion yuan with 20% annual increase

for 10 consecutive years. China has become the world's first agricultural machinery manufacturing power, having advantage in scale. The following chart shows the comparison of total output value of Chinese and global agricultural machinery industries.



Although China has become the world's leading agricultural machinery manufacturing power, the industry is still facing the following challenges:

1 \ Foreign companies are dominating the high-end market. In the provinces, like Heilongjiang and Xinjiang, where requires big machines of high efficiency, foreign brands have monopolized the market.

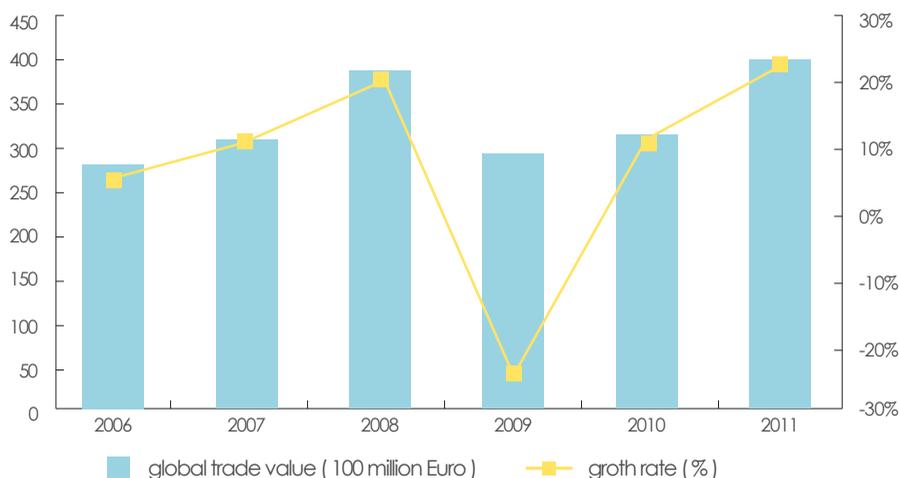
2 \ The key technology is still controlled by other countries. Domestic enterprises still lack the scale production capacity in making large cotton picker, above 240 horsepower tractor, sugar cane and potato harvester, and main machinery for some economic crops production. Breakthroughs in key machinery parts have not been achieved.

3 \ China does not have global renowned brands.

Production element resources including personnel, capital, technology and equipment have achieved global flow. In 2012, China's agricultural machinery exports increased nearly 12 times compared with that of 10 years ago. Some agricultural machinery enterprises are rising in globalization, and have established foundation for internationalization. At the same time, foreign enterprises further increase the weight in the industry. There are 147 foreign agricultural machinery enterprises above designated size in China, accounting for 7.97% of the total number of such

enterprises. The output value of these foreign enterprises accounts for 12.06% of the total, while their export transaction value accounts for 54.86% of the total. In 2011, acquisition of French Mcc Company by China YTO Group Corporation initiated the cross border acquisition of Chinese agricultural machinery enterprises, and set a good example of utilizing global R&D resources.

The Chart below shows the global agricultural machinery trade value between 2006 and 2011:



While, the following chart illustrates the import and export value of agricultural machinery in China from 2006 to 2011:



In the recent 10 years, the rapid development of agricultural market of China has attracted many international agricultural machinery enterprises to invest in China. The foreign capital has accelerated its activities in China. For example, the America AGCO acquired Shandong Dafeng; And Italian Same Deutz-Fahr established joint venture company with Shandong Changlin. Many foreign companies, including

Lemken and Kverneland, came to invest in China. Among the over 100 Japanese agricultural machinery companies, 20 have entered China. Four leading agricultural machinery companies in Korea, and top five agricultural machinery companies of the world have all entered China.

In the circumstance of globalization, the domestic competition became internationalized while international competition became globalized. Chinese agricultural machinery enterprises have to fully utilize both the domestic and international resources, extend the markets in China and the world, and actively engage into the international competition.

For achieving the transfer from big to strong, the Chinese agricultural machinery manufactures have to address the current constraints encountered including insufficient resources, increased environmental pressure, enhanced requirements from customers, augment of trade friction, fierce competition, gradually declined profit, and growth of operation costs. Chinese agricultural machinery enterprises have just started their journey of internationalization. Efforts need to be oriented to improve their global competitiveness focusing on entity, products and human resources.

In specific, the diagram below elaborates the path of industrial transformation and updating for Chinese agricultural machinery industry:

