

# Research status and development of small corn thresher



Maize is a widely planted crop in the world. Threshing is the most complicated problem in the whole planting process. To solve this problem, the industry has developed a variety of threshing machines. Among them, small-sized corn threshers are more suitable for rural households and improve efficiency at the same time. The labour force was saved. However, the current corn thresher generally has some problems, such as simple structure, single function, damage to corn kernels or difficult to adapt to a variety of environments.

## [Microwave drying machinery and equipment](#)

Therefore, the improvement and optimization of maize threshing device structure is the focus of all agricultural machinery workers. It is urgent to develop a new threshing device which can meet the requirements of good performance, high productivity, good adaptability and low grain breakage rate. 1. The development status of threshers in China. Thresher has been widely used in many rural areas of China for decades. According to incomplete statistics, at present, China is producing various types of threshers at the rate of about 300,000 units per year.

There are about 500 threshing machines related enterprises all over the country. Among them, the enterprises producing large-scale corn and rice threshers are mainly concentrated in the three provinces of Northeast China. The threshers in this region have reasonable structure design, high technical content and complete functions, and are mostly used for commercial operations. Most of the enterprises producing medium-sized corn threshers are located in the Central Plains, with large output; and the enterprises producing small-sized rice, wheat and small-sized rice are mostly distributed in the Central Plains. The enterprises of type I corn thresher mainly concentrate in the South area. Most of the threshers in this area are modified by simple pedal thresher to increase power. They are simple in structure and low in technology.

They are mostly used in courtyard and field operations.

In order to meet the different needs of users, not only the size of the thresher is different, but also the threshing mode of the thresher is different. In the early 1970s, the impact [small corn thresher](#) developed by ourselves was widely popularized. In the early 1980s, China imported a number of complete sets of seed processing equipment from abroad, and the rubbing corn thresher developed independently has also been greatly promoted. The typical representative is the 5TY-0.2 corn thresher developed by Chongqing Agricultural Machinery Research Institute. In recent years, on the basis of introducing, digesting and absorbing foreign advanced equipment, China has independently developed a new type of rubbing corn thresher developed by the Planning and Design Research Institute of the Ministry of Agriculture. Subsequently, Beijing Toyota, Beijing Xida Agricultural Engineering and Gansu Jiuquan have also produced a variety of series of extruding corn threshers. In 2007, Li Xinping of Shenyang Agricultural University successfully developed a high-speed corn thresher.

Strengthen the theoretical research of the existing small corn thresher and further improve the threshing efficiency can not only rely on empirical formulas and experiments, but also should adopt modern theoretical research methods and combine advanced technology to carry out comprehensive analysis of the corn thresher, and obtain the optimal structural parameters and clearance parameters, so as to provide more reliable theoretical basis for design. According to it. 4.2 Strengthen the application of new materials in threshing device to reduce the rate of grain breakage. At present, nail-tooth materials mostly use 45 steel. Although the surface is heat-treated, its toughness is not high, maize is easy to damage and wear easily. There is an urgent need for a new material with good wear resistance, strong impact resistance, heat resistance, high fatigue strength and non-sticky crops to produce nail teeth and improve threshing quality.

Therefore, the research and application of new materials is a key direction in the development of threshing devices. 4.3 With the help of modern design methods and means, the modular design method of the new threshing device is studied. The structure of the threshing device is further optimized by means of computer software such as microelectronic automation control technology, ergonomics, ANSYS and so on. 4.4 The structure of threshing device was improved to improve the performance of the whole machine by changing the top pin teeth to flat-top rounded corners to reduce the rate of grain breakage; changing the shape of the drum to conical rather than cylindrical to increase the force of corn in the threshing process; symmetrically setting a pair of long pin teeth at the end of the drum to ensure that the corn rod is not blocked during threshing process. The function of peeling and threshing of wet corn is integrated to make up for the defect of single function and poor adaptability of small corn thresher.