Floating coefficient test on peanut hull sheller

In order to reasonably design the pneumatic separation and secondary shelling pneumatic conveying device for peanut, the main peanut varieties in Liaoning Province were taken as the research object, and the aerodynamic characteristics of the main components and impurities of the peanut sheller were tested by microwave drying machine. The damaged peanut pods and the peanut pods which need secondary shelling were obtained.

The floating coefficients of fruit, peanut rice, peanut shell and stone are 0.168-0.246, 0.102-0.146, 0.080-0.186, 3.287-6.037 and 0.031-0.045 m-1, respectively. The results showed that the floating speed of peanut pods, damaged peanut pods, peanut rice, peanut shell and stone varied greatly, which was conducive to the pneumatic separation, and could be used as an important reference for the design of the sorting device and pneumatic conveying device of peanut sheller.

In the process of peanut shelling, there are intact peanut, damaged peanut, broken peanut shells, unpolluted peanut pods and all kinds of impurities in the peanut shelling products. It is necessary to remove impurities and classify them in time. The unpolled peanut pods need to be shelled again. Conventional cleaning methods are based on physical and mechanical properties such as material geometry, aerodynamic characteristics and density, such as air selection, screening, air screening, density selection, etc.

Air separation and air screening are commonly used methods, which mainly use the aerodynamic characteristics between different materials to achieve the purpose of separation. Therefore, exploring the aerodynamic characteristics of all kinds of peanut sheller exudates is of great significance to the study of the mechanism of peanut pneumatic cleaning and the design of high efficiency and low consumption pneumatic separation device.

On the aerodynamic characteristics of agricultural materials, predecessors have done a lot of work and achieved useful results, such as: B.Y. Gorial has studied the floating speed and coefficient of grain and straw through experiments; Zhao Xuedu, Li Ge, Ma Zheng, Li Yaoming have studied the floating speed of peanut, rape and other airflow fields respectively. And air velocity during peanut transportation. However, there are few studies on the aerodynamic characteristics of peanut shellers, such as damaged peanut pods, small peanut pods that need to be shelled twice, peanut rice and peanut shell.

One of the main peanut varieties in Liaoning was four grains of red, which was produced in Fu Jia town, Changtu county. Peanut pods and pellets (Fig. 1) are taken from the sheller operation site. The sheller is a self-developed double drum pneumatic circulating peanut sheller, a plate Sheller and a concave sieve.