A peanut vacuum has been developed by a company specializing in pneumatic conveying equipment by redesigning their existing grain vacuum (vac) specifically to handle farmers’ stock peanuts accounting for the desire to maintain the integrity of the peanut pod throughout the conveyance process. The peanut vac consists of a PTO-driven positive displacement blower, two cyclone separators, and a hydraulically-powered airlock valve. The blower pulls air and farmers’ stock peanuts through a length of suction hose into the first cyclone separator where the peanuts are separated from the airstream. The air then travels to a second cyclone separator where the suspended dirt and other fine particles are separated from the airstream. The cleaned air proceeds through the blower and is blown through a discharge chute beneath the outlet of an airlock valve mounted on the bottom of the first cyclone. Farmers’ stock peanuts from the first cyclone fall from the outlet of the airlock valve into the airstream in the discharge chute and are conveyed up into a waiting trailer. The peanut vac is powered by a 1000-rpm PTO shaft of a tractor supplying a minimum of 100 hp.

The peanut vac was taken to two locations in South Georgia and used to extract peanuts from farmers’ stock warehouses in addition to the conventional equipment used for warehouse bailout. The weight of peanuts on each truck, time to fill each truck, and the farmers’ stock grade factors for the peanuts in each truck was recorded and compared by conveyance method. At the first location, the conventional equipment consisted of a skid-steer loader with an oversized bucket driven into the pile of peanuts. The peanuts were emptied into a surge bin feeding a portable conveyor belt that conveyed the peanuts into a waiting truck. The conventional process at the second location was similar to the first, except that a large articulated bucket loader was used in lieu of the skid-steer loader. At the first location, there were no statistically significant differences observed in the farmers’ stock grade factors, particularly the loose shelled kernels (LSK) and foreign material (FM), nor the loading rate due to the bailout equipment used. The average loading rate using the peanut vac at location 1 was 69 t/h compared to 84 t/h when loaded with the skid-steer loader. At the second location, peanuts conveyed using the peanut vac had significantly less LSK (4.9%) and FM (2.8%) than those conveyed using the bucket loader (LSK=7.9%, FM=4.9%). The total sound mature kernels (TSMK) was 1.4% higher in the peanuts conveyed using the peanut vac compared to those conveyed using the bucket loader, implying that the additional LSK were generated from the larger, more valuable peanuts. The bucket loader loaded the trucks at a much higher rate (215 t/h) than the peanut vac (47 t/h).