Bulk handling system tenders to load planting hoppers are used for corn, soybean and small grain but have not been used for peanut because of potential excessive mechanical seed damage.

Tests were conducted to measure the mechanical damage to peanut seed in bags and on a belt-type- and a pneumatic bulk seed tender. Twenty 23-kg bags of treated Georgia Green peanut seed were obtained and each bag was divided into two 11.4-kg samples. A 500-g subsample was retained to determine initial levels of mechanical damage. After all peanut seed were divided and loaded into the bulk seed tenders, each tender was operated and approximately 11.4 kg of peanut seed were loaded into a plastic bucket to simulate loading a seed hopper on a planter. Total weight of peanut seed and the time required to transfer the seed from the bin to the bucket were recorded. Mass flow rate was controlled by opening and closing the gates on the feed hopper. A 500-g subsample was retained from each 11-kg sample for analysis. Tests were repeated until all peanut seed had been emptied from the bulk seed bin. Split/broken seed were hand sorted from each of the 500-g subsamples and weighed. The 500-g samples were subjected to standard and cold seed germination tests. An additional 1000-g sample was retained from each 11-kg sample and commingled with other seed from the same handling system to form a 23-kg composite sample for planting. The 23-kg sample was planted in four replicated plots. Seedling emergence was determined periodically beginning 4 d after planting until 30 d after planting.

The average flow rate for the belt system was 106 kg/min compared to 72 kg/min for the pneumatic system. Total damage was significantly higher in seed transferred from the bin to the planter using the bulk handling systems. Bagged seed, with no additional handling, had 0.5% total damaged seed. This was significantly lower than the 1.1% and 2.5% damaged seed using the belt and pneumatic systems, respectively. Germination percentages for bagged and pneumatically transferred seed averaged 95 and 96 %, respectively and were not significantly different. The seed transferred using the belt system had a significantly lower germination rate of 89%. Plant emergence percentages with economic comparison of the bulk seed handling systems to conventional manual handling of bagged seed will be presented.