## Effects of Peanut Digger Blade Geometry on Yield and Losses

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Research was conducted at Clemson University's Edisto Research and Education Center in 2020 and 2021 to determine the effects of peanut digger blade geometry and aggression on peanut harvest loss during peanut digging operations. The two years of research utilized an independent, random block design with five replications consisting of four blade geometry treatments: blade bevel down, blade bevel up, small shim (0.318 cm; 0.125 in.) and large shim (0.635 cm; 0.25 in.). In addition to blade geometry treatments, two late leaf spot control treatments (low levels of control and high levels of control) were prescribed to plots. Testing was conducted in two fields, one for each year of research. The investigation was focused on two distinct regions within each field, an area of lighter textured soils (95% sand content for 2020 and 94% sand content for 2021) and an area of heavier textured soils (91% sand content for 2020 and 85% sand content for 2021). The Virginia peanut variety, Emery, was used for the study. Digging operations utilized a two-row automated depth controlled KMC 2-38 peanut digger and all plots were planted and dug with the use of RTK corrected autosteer in two-row plots, 19.2 meters (63ft) in length. Consistent engine speeds and gear ranges were used during digging, resulting in consistent ground speeds of 4.0 kph (2.5 mph) for both years of research. Recovered yield data was collected using a 2-row plot combine and consistent combine settings were used throughout the duration of harvest in each year.

Results from the study demonstrated average recovered yield benefits of 242 kg $ha^{-1}$ (216 lb $ac^{-1}$) in heavy soils and 214 kg $ha^{-1}$ (191 lb $ac^{-1}$) in heavily diseased peanuts when increased blade aggression was used. Testing further demonstrated significantly improved recovered yields in the most adverse digging conditions tested with blade geometry optimization; indicating a mean recovered yield increase of 323 kg $ha^{-1}$ (288 lb $ac^{-1}$). The research suggested substantial effects on yield recovery as a function of blade geometry and aggression and characterized peanut digger blade performance during operation.