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**Project Title:** Cropping Systems and Agronomic Management Research for Peanut

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Impact of crop rotation and peanut rotation partners on leaf spot intensity, stem rot incidence, root knot nematode damage, and the yield of two peanut varieties was assessed in 2016. Peanut plots will be split to include the peanut root knot (*Meloidogyne arenaria* Race 2) resistant Tifguard and Georgia-14N along with the root knot susceptible Georgia-06G peanut cultivars to assess the interaction between peanut cropping frequency and value of a root knot resistant peanut cultivar. Peanut rotation sequences will include 27 years of continuous peanut production as well as peanut behind 1 year of corn, bahiagrass, corn, cotton, pearl millet, soybean, and summer fallow as well as peanut behind two years of pearl millet, cotton, and corn. Cotton plots were split into four subplots of two cotton root knot resistant (*Meloidogyne incognita* race 4) cotton varieties (Phytogen 487 and Deltapine 1747) and two cotton root knot susceptible varieties (Phytogen 499 and Deltapine 1646) to assess the interaction between cotton cropping frequency and cotton variety selection as well as differential variety reaction to the disease target spot. Overall tomato spotted wilt (TSW) pressure was low across all cropping patterns and with previous crop and peanut cropping frequency having little or no impact on disease incidence. Incidence of TSW was also lower in Tifguard and Georgia-14N than Georgia-06G. Significant differences in the level of premature defoliation attributed to leaf spot diseases differed by peanut cropping frequency and cropping partner. When compared with continuous peanuts, reductions in the leaf spot-incited defoliation was obtained in peanut under all other rotations patterns with the least leaf spotting seen in peanut cropped behind one year of grain sorghum. While overall leaf spot pressure was low, Georgia-06G has lower leaf spot-incited defoliation ratings than Tifguard and Georgia-14N. White mold incidence was lower in peanut when compared with previous two years. White mold incidence differed with peanut cropping frequency with the two, three, and five year out rotations having a lower disease incidence than the one and two year out rotations. Previous crop did not impact white mold incidence. Tifguard and Georgia-06G had higher white mold indices than Georgia-14N. Yields were higher as the interval between peanut crops lengthened from continuous peanut production at 4406 lb/A to the four year out rotation at 5535 lb/A with similarly low yield recorded the former cropping sequence and one-year out rotation. Yields for peanuts in the two, three, and four year out rotations were also equally higher compared with the one year out rotation. Peanut variety selection had no influence on yield and variety yields did not differ by peanut cropping frequency. For the one-year out rotations, yield was higher for peanut cropped behind bahiagrass than corn and grain sorghum but similar for peanut following pearl millet, soybean, cotton, summer fallow, and peanut.

The 2017 rotation study is nearly harvest and data collection from the peanut and cotton is in progress.