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Progress Report + Summary  
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**Project Title:** Agronomic Practices & Strategies for Organic Management and Production of Peanuts

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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 2017. 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. For 2017, only Georgia-14N and Georgia-06G peanut varieties were established. 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 1558 RN) and two cotton root knot susceptible varieties (Phytogen 499 and Deltapine 1252 [2016] or Deltapine 1646 [2017]) to assess the interaction between cotton cropping frequency and cotton variety selection as well as differential variety reaction to the disease target spot. In 2017, overall TSW pressure was low but disease incidence was higher for the 3 year out rotations and those where one year of cotton, corn or bahiagrass were followed by two consecutive years of peanut. Late leaf spot differed by peanut cropping frequency and peanut cultivar. Regardless of peanut cropping frequency, defoliation levels were lower on Georgia-14N than Georgia-09B. On the latter peanut cultivar, higher levels of leaf spot-incited defoliation was noted in the continuous peanuts than the 2- and 3-year out but not 1- and 4-year out rotation sequences. For Georgia-14N, peanut cropping frequency had no impact on late leaf spot incited defoliation. Incidence of white mold also differed significantly by peanut cropping frequency and peanut cultivar with higher disease levels noted at all cropping frequencies on Georgia-09B than Georgia-14N. As previously noted for late leaf spot, white mold incidence in Georgia-09B was greater for continuously cropped and 1-year out rotations than 2-, 3-, and 4-year out rotations, all of which had similarly lower disease indices. Final root knot populations differed by peanut cultivar but not peanut cropping frequency with significantly lower nematode counts recorded for Georgia-14N than for Georgia-09B. Yields significantly differed by peanut cultivar and peanut cropping frequency. Higher yields were recorded for Georgia-14N than Georgia-09B for the 1-year out rotations and where one year of cotton, corn or bahiagrass were followed by two consecutive years of peanut. Despite significant reductions in leaf spot defoliation, white mold incidence, and root knot populations for Georgia-14N compared with Georgia-09B, yield for the two varieties in the continuous peanut rotation sequence were statistically similar. Also, similarly yields were obtained for both cultivars in the 2-, 3-, and 4-year out rotations.

For 2017 cotton rotations included continuous cotton (28 years), two years of cotton preceded by peanut, and a one year out peanut – cotton rotation. Over all cultivars, target spot severity was higher for the peanut – cotton – cotton rotation compared with continuous cotton and cotton following peanut. Of the four cotton cultivars, PhytoGen 499 WRF suffered heavier disease related defoliation compared with the other three cultivars, all of which had similarly low defoliation ratings. A low incidence of bacterial blight was observed with higher levels of leaf spotting and premature defoliation observed on Deltapine 1747 B2RF compared with the other cultivars, which suffered little damage. Cotton cropping frequency did not impact bacterial blight intensity. Similar yields were recorded for all cotton rotations. Among the four cotton cultivars, highest yields were noted for Deltapine 1646 B2XF, while PhytoGen 499WRF produced the lowest yields.