

Rotating Soybean with Peanut Affects Pod Yield, Grade, and *Meloidogyne arenaria* Root Galling

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Common rotational crops for peanut (PN) (*Arachis hypogaea* L.) include cotton (*Gossypium hirsutum* L.) and field corn (CR) (*Zea mays* L.). Although, soybean (SY) (*Glycine max* [L.] Merr.) is another row crop often grown in PN producing areas. Since SY and PN are both legumes and are hosts to similar pests, they are not recommended to be grown in the same crop rotations. However, they are often found in short-term sequence in some fields. The primary objectives of this study were to evaluate the effects on PN yield, grade (% total sound mature kernels), and root galling by peanut root-knot nematode (PRKN) (*Meloidogyne arenaria*) of various crop rotation sequences with CR and SY and duration between peanut plantings. Nine different crop sequences were planted so that 1-, 2-, 3-, and 4-yr rotations all cycled to PN in 2018. A secondary objective included a split-plot effect to compare a PRKN susceptible cultivar (Georgia-06G) to a PRKN resistant cultivar (Georgia-14N). When PN was grown after 3 consecutive years of CR, yield was 31% greater than a PN-CR-SY-PN rotation and 88% greater than a PN-SY-PN rotation. The PN-SY-PN rotation also resulted in a 2-4 % lower grade than any other rotation. There were no yield or grade differences between cultivars. Yet, PRKN galling resulted in an interaction between rotation sequence and cultivar. There was no galling on Georgia-14N regardless of the rotation. But Georgia-06G had greater galling than Georgia-14N in all rotations that included SY, continuous PN, and PN following 2-yr weedy fallow. There was also greater galling incidence within Georgia-06G plots for the continuous PN, PN-SY-PN, and PN after 2-yr weedy fallow compared to any other rotation. This data shows that inclusion of SY in rotation with PN is detrimental to yield and grade, and if a susceptible cultivar is used, poor rotation can also support PRKN populations by providing a host. It is a validation of the recommendation that SY should not be grown in rotation with PN unless in rotations that are long enough for at least one year of a non-leguminous crop between each legume.