

## Economics of Peanut Root-knot Nematode Control

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Peanut root-knot nematode, *Meloidogyne arenaria*, is a well-known pest of peanut. In recent years, new nematicides and nematode-resistant varieties have been developed. This research was conducted to find the most cost effective way to control peanut nematodes in fields with varying nematode pressure. Large plots (6 rows by 500-600 ft) were established in 2016 and 2017 on a farm in Decatur County, GA with a history of root-knot nematode problems. This trial featured four treatments including 1) a nematode susceptible variety GA-06G with Velum Total (18 fl. oz./A) applied in furrow, 2) GA-06G with Velum Total (18 fl. oz./A) in furrow followed by Propulse (13.6 fl. oz./A) 60 days after planting, 3) nematode resistant variety GA-14N, and 4) nematode resistant variety Tifguard, each without nematicide. The field was treated uniformly with regard to weed, insect and disease control. Tomato spotted wilt virus (TSWV) was rated before digging and other diseases and nematode damage were rated after digging. Plot yields were determined and the gross return (dollar value per acre) for each treatment was calculated based on the yield and grade, and compared after subtracting any input cost for nematode control. The cost of Velum Total and Propulse applied to variety GA-06G were deducted at the rate of \$34/acre and \$45/acre, respectively. The value of GA-14N was calculated with and without a \$50/acre high oleic premium. The data were analyzed with SAS Proc mixed (P=0.05) to determine significant differences among treatments.

GA-06G exhibited significantly more virus symptoms than GA-14N or Tifguard in 2016. GA-06G also exhibited root and pod galling (77.5% and 82.5%, respectively) despite nematicide treatment, while GA-14N and Tifguard had minimal damage on scattered plants and were not significantly different from each other. Testing seed from these plants showed an absence of the molecular markers for nematode resistance in many of the Tifguard plants. Levels of nematode damage were much lower in 2017. In 2016, Tifguard, GA-06G and GA-14N had yields of 6247, 5872, and 5613, respectively (LSD = 228). There were no significant differences between cultivars in terms of grade or dollar value per acre. In 2017 the GA-06G with Velum Total + Propulse had the highest yield, in part due to this treatment having less white mold than the Velum only treatment. After deducting the cost of the treatments, there were no significant differences found in the economic return among the four treatments. However, when adding the \$50 per acre bonus for high O/L, the GA-14N had the highest per acre return (\$1097), which was significantly higher than all treatments except the GA-06G with Velum Total and Propulse (\$1032). These results demonstrate that growers have several good options to manage root-knot nematodes in peanuts. It should be noted that in year one of this study over half the plot area had moderate nematode pressure while the other half had very little nematode pressure. In year two the nematode pressure was relatively low throughout plot area.