

Addition of Thrips Category to Peanut Rx for Prediction of Risk to Spotted Wilt

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Management of Tomato spotted wilt disease, caused by the *Tomato spotted wilt virus*, is important for peanut growers in the southeastern United States. Peanut Rx, whose origins date to 1996, continues to be an important management tool that estimates risk to the disease. Peanut Rx is used to calculate a total pre-season risk by summing risk from individual production practices to include variety, planting date, plant-stand, use of in-furrow insecticide, tillage and row pattern. Risk in a field is considered “low”, “moderate”, or “high” based upon the summed points. The objective of this study was to determine if addition of a new “thrips vector” category, based upon timing of predicted peak population of the tobacco thrips, *Frankliniella fusca*, will improve the predictive ability of the index.

Field trials were established at six research farms located near Midville, Reidsville, Camilla, Tifton, Attapulgus and Plains in 2017 and 2018. The experimental design was a split-split-plot design where whole plots were planting date (early, mid and late), sub-plots were variety (Georgia-06G and FlorunTM157' in 2017 and Georgia-06G and TufrunnerTM511' in 2018) and sub-sub-plots were treatment with or without phorate (Thimet 20G, 5 lb/A) at planting. These combinations created 12 different risk-point totals based upon Peanut Rx. Plots were rated for spotted wilt on a biweekly schedule throughout the season. Peak thrips periods were estimated for each location using the “Thrips Infestation Predictor for Cotton” from North Carolina State University. From the predicted thrips peak periods (before 15 April, 16-30 April, 1-20 May, after 20 May) and the frequency of spotted wilt severity categories observed in the field trials (<5%, 5%-14%, ≥ 15%) a mosaic frequency table was created and “thrips” risk points were assigned based abundance of severity category observed in each peak period (5, 20, 30, 15, respectively). Logit-transformed values for spotted wilt observations were regressed against standard Peanut Rx point totals and against point total for Peanut Rx + Thrips Factor and compared.

Severity of spotted wilt in low risk categories from Peanut Rx across two years and six locations varied by 12.4%. Severity of spotted wilt in high risk categories from Peanut Rx varied by 40.6%. The highest level of spotted wilt severity was observed when the thrips peak was predicted to occur between 1 May and 20 May. The lowest severity was observed when the peak period was predicted to occur prior to 15 April. When spotted logit transformed spotted wilt data were regressed against risk points, R²-values were improved, MSE-values were reduced and regression slopes increased when for the thrips-modified Peanut Rx versus the standard Peanut Rx tool.