EFFECT OF ROTATION ON *ROTYLENCHULUS RENIFORMIS* NEMATODE POPULATIONS IN USING COTTON CULTIVARS IN WEST TEXAS

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Abstract

Rotylenchulus reniformis, reniform nematode, is a limiting factor for cotton (*Gossypium hirsutum*) production in West Texas, sometimes reducing cotton yields by up to 40%. Reniform nematode management with crop rotation in this region is usually limited to peanuts, sorghum, and corn. Irrigation availability continues to drop in this region, resulting in more circles having fallow ground, or dryland cotton, and irrigated cotton under the same circle. With limited water, it can be more profitable to only farm part of a center pivot irrigated circle. For this reason, the objective of this study was to evaluate the effect of a three-year rotation (2020, 2021 and 2022) of resistant cotton variety (R= DP 2143NR B3XF), susceptible variety (S= DP 2044 B3XF), and weed-free fallow (F) on *R. reniformis* populations and cotton yield. A trial was established at the Texas A&M AgriLife Research and Extension Center at Lubbock, Texas. The three-year rotation includes a combination of reniform resistant cultivar, reniform susceptible cultivar and fallow for a total of 9 treatments (RRR, SSS, RSR, RRS, RSS, FSF, FSS, FFS, FRS) with four replications per year. To determine the effectiveness of each treatment, nematode populations and cotton yield were collected. Nematode extraction was performed using the pie pan method. Only the results for the first two years rotation (2020 and 2021) were presented. The FF treatment (60.00 RN/100 cm^3 of soil) had the lowest nematode populations followed by the RR treatment (295.00 RN/100 cm3 of soil). However, treatments with F (fallow) rotation (FR= 727.53 Lint/A, FS= 571.55 Lint/A) decreased cotton yield, while the RR treatments has the highest yield (818.38 Lint/A). The SS treatment (835.00 RN/100 cm^3 of soil) had the highest nematode population and the lowest cotton yield (460.95 Lint/A). The *R. reniformis* population decreased 65% when comparing the RR treatment with the SS treatment. The RR treatment could represent an alternative to manage the populations of this nematode and improve cotton yields compare to other treatments.