USE OF A LIQUID FERTILIZER (AGRALI) TO REDUCE *ROTYLENCHULUS RENIFORMIS* POPULATION DENSITY AND INCREASE COTTON YIELDS

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Abstract

The overall objective of this study was to evaluate the effects of AgraLi on the population density of *Rotylenchulus reniformis* and subsequent effects on cotton yield. AgraLi is a by-product obtained from the process of making the chicken feed additive methionine and has a nutrient analysis of 2-0-13 (N-P-K). Tests compared an untreated control, AgraLi, ammonium polyphosphate (fertilizer), fluopyram + imidacloprid nematicide (Velum Total), AgraLi + Velum Total, and ammonium polyphosphate + Velum Total. Field evaluations were conducted in 2017 and 2018 using PhytoGen 487WRF cotton as a host plant. Tests found that all treatments which included the nematicide Velum Total significantly (*P* d 0.1) reduced the number of *R. reniformis* eggs/g of root when compared to ammonium polyphosphate. AgraLi, when applied alone, was able to reduce *R. reniformis* eggs/g of root by 78% compared to the untreated control which was similar to the reduction observed with Velum Total. AgraLi + Velum Total were not only able to reduce the nematode population density but resulted in significantly (*P* d 0.1) larger plants, measured by plant height and total plant biomass compared to the untreated control during both years of the testing. This combination treatment of AgraLi + Velum Total also increased seed cotton yield over the untreated control and Velum Total alone during 2017. When AgraLi and Velum Total were applied in combination, a yield increase of 1,491 kg/ha was observed over the untreated control and a yield increase of 417 kg/ha was observed over Velum Total alone during this year. During the 2018 testing year, some phytotoxic effects were observed from the use of AgraLi which resulted in a reduced plant stand for all treatments that included this chemical. It is hypothesized that the reduced plant stand lead to lack of yield increase from the chemical in 2018 evaluations.