Phymatotrichopsis Root Rot Management in Alfalfa

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Abstract

Phymatotrichopsis root rot (PRR), a soil borne fungal disease, caused by Phymatotrichopsis omnivora, damages alfalfa stands and reduces yields in the low desert Arizona. There are gaps in the research of the PRR in Arizona’s alfalfa production system. This study was conducted to evaluate the efficacy of flutriafol (Topguard™) on PRR activity and resulting alfalfa yield. Multiyear on-farm replicated trials in a Randomized Complete Block Design were conducted in known PRR infested alfalfa production areas of Arizona. Flutriafol was applied at different rates (0.56, 1.12 and 2.24 kg ha⁻¹ in 2015; 0.28, 0.53, 1.05 kg ha⁻¹ in 2016 & 2017) using a backpack CO₂ pressurized sprayer operated at 30 psi, delivering 20 gpa (TeeJet twinjet 8003 nozzles, broadcast over the top). An untreated check (UTC) was included in each trial. To determine yield, four to six hay cuts were made at approximately monthly interval using a BCS™ walk behind tractor with sickle bar mower from an area of 6.87 square meter. Data analysis was performed using JMP-SAS Ver. 13 Statistical Software and Student’s t-test used in mean comparison for each pair. We found positive benefit of flutriafol use to decrease PRR induced yield losses in all locations. In 2015, the higher two rates (1.12 and 2.24 kg ha⁻¹) resulted in significantly (P<0.05) higher yield than the untreated control. The highest yield was recorded at the lowest rates (0.28 kg ha⁻¹) of applications in 2016. In 2017, twice application of 0.28 kg ha⁻¹ had significant yield advantage over the untreated check. The varying results for the different application rates in each year may indicate different level of pathogen occurrence in specific year. The scope of this study was limited to the effect of fungicide on the disease occurrence and alfalfa hay yield. Continued research deemed necessary in Arizona to have better understanding of the pathogen-fungicide-soil interactions and crop sequences influence on PRR and on the efficacy of this promising fungicide remedy.