A026 AGSC

Effects of Cool Season Cover Crop Roots on Germination and Growth of Test Species Annual Ryegrass and Lettuce

Abstract

Cover crop plant material can exhibit an inhibitory interaction with other plant species, but the effects are typically more pronounced from the leaves compared to other parts of the plant. This allelopathy causes decreases in crop growth and yields when planted after a cover crop. The objective of this study was to determine the effect cover crop roots have on the germination and growth of test plant species. Nine cool season cover crop species [annual ryegrass (AR), buckwheat (BW), cereal rye (CR), crimson clover (CC), radish 'Daikon' (DR), red clover 'Kenland' (RC), triticale (TR), white clover (WC), and winter wheat (WW)] were grown in containers (1 gal) with soilless mix for 14 weeks, then all shoots were cut to the substrate surface and removed. A control with only soilless mix was also included. Thirty seeds of the two test species (annual ryegrass and lettuce) were sown into containers (six replications per cover crop) then arranged in a randomized complete block design. Data collection included germination number at 2 and 4 weeks after sowing (WAS), seedling height at 4 and 6 WAS, and biomass (shoot dry weight) at 6 WAS. Annual ryegrass germination was greater in DR compared with CR, RC, and WC but similar to the control. Annual ryegrass biomass was greater for DR compared to CR, WC, RC, BW, and the control. Analysis of lettuce showed no differences in germination number, shoot height, or biomass between cover crops and the control. From this study the presence of cover crop roots did not inhibit growth of the two test species compared to no cover crop. Also, increased germination and growth of annual ryegrass resulted from several cover crops. Allelopathic compounds capable of suppressing growth may not be present in cover crop roots but be more concentrated in the shoots.