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Establishment of Selected Cool Season Cover Crops for Middle Tennessee Nurseries

Nursery crop production is a major contributor to agriculture in middle Tennessee. Nursery practices have the potential to cause long term damage to the soil by erosion of topsoil and compaction from mechanized equipment. Cover crops are capable of regenerating soil as the presence of cover crops limits soil erosion and increases soil organic material, while cover crops with large root systems are additionally capable of aerating the soil and breaking up compaction. In nurseries, cool season cover crops are grown between rows of planted trees and shrubs so they can provide these benefits without competing for resources. The objective of this study was to evaluate overall growth and establishment of nine cool season cover crop species for use in middle Tennessee nurseries. Cover crops [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 planted into 4 ft by 20 ft plots (4 replications) using an all-purpose seeder on Oct. 1, 2021. Data included germination percentage (Oct.), soil temperature (monthly), soil volumetric water content (VWC; monthly), percent coverage of the cover crop (Mar., Apr., and May), shoot height (Apr. and May), and shoot dry weight (May). Germination percentage showed DR germination was greatest while WC germination was the lowest. Soil VWC and temperature did not show any differences among cover crops. Only six species (AR, CC, CR, RC, TR, and WW) established and survived the winter. In May, the percent coverage was similar for all the remaining cover crops. Shoot height in May was greatest for TR and lowest for RC. Shoot dry weight was greatest for CC and lowest for AR, CR, and RC. All six species that survived the winter are suitable for use in the middle Tennessee nursery industry. These cover crops do not compete with nursery crops when planted between rows and can be controlled easily using mechanical controls such as mowing if needed. The cereal cover crops such as CR, TR, and WW act as a living mulch and provide biomass, while legumes such as CC and RC fix nitrogen that can remain in the soil. Buckwheat is a nurse cover crop that lacks cold tolerance and was not expected to survive the winter. Radish and white clover likely did not have time to establish prior to freezing temperatures, thus may need to be planted in late summer or early fall. In future studies, the establishment of cool season cover crops planted in spring should be evaluated to determine if spring planting can establish cover crop species that failed to survive winter in the fall planting.