

IMPACT OF DEFOLIATION HEIGHT ON CROWN AND SOIL TEMPERATURE

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Defoliation management in pastures and hayfields can impact the productivity and persistence of cool-season grasses. Past research has shown that defoliation height and frequency impacts both leaf area and energy reserves in the plant. However, limited data is available on the impact of defoliation on the microclimate in cool-season grass stands. The objective of this study was to evaluate the impact of defoliation height and frequency on soil and crown temperatures of an established cool season grass stand. This study was conducted at the University of Kentucky's Research and Education Center, located near Princeton, KY. The experimental design was a randomized complete block with four replications. An established tall fescue (*Schedonorus arundinaceus* (Schreb.) Dumort., nom. cons.) stand was defoliated to 1.0 and 4.5-inches weekly and monthly to 4.5 inches. Crown and soil temperature were measured at 15 minute intervals using HOBO MX2303 loggers (Onset Computer Corporation, Bourne, MA). The 1.0-inch defoliation height increased crown temperature by more than 10 degrees Fahrenheit on the days with air temperature that exceeded 90 degrees Fahrenheit. Soil temperature was also higher at the 1-inch defoliation height, but to a lesser extent. Our data, indicate that maintaining adequate residual leaf area in pastures and hayfields (>4.5-inches) could moderate the microclimate at and below the soil surface, which may in turn aid in the persistence of cool-season grass stands in the transition zone between the temperate northern and subtropical southern United States.

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