Growth Analysis of Tall Fescue Genotypes Differing in Yield and Leaf Photosynthesis

Wallace Wilhelm
University of Nebraska - Lincoln, wwilhelm1@unl.edu

C. J. Nelson
University of Missouri

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Leaf growth, dry matter distribution, and carbohydrate content of four tall fescue (Festuca arundinacea Schreb.) genotypes selected for high and low net CO₂ exchange (NCE) and forage yield were studied in controlled environments to evaluate the leaf NCE-yield relationship. High yield genotypes produced greater amounts of all plant parts and carbohydrate than the low yield genotypes. Within each yield level the high NCE genotypes produced more dry matter and carbohydrate. Leaf growth of all genotypes was linear throughout light and dark periods, but rates were 50% greater for high yield genotypes. RGR was similar for all genotypes. NAR and RLagr were greater for high yield genotypes while LAR was greater for low yield genotypes. Yield related factors such as dry matter distribution and leaf growth tended to overcome NCE differences.