MORPHOLOGICAL VARIATION BETWEEN TWO POPULATIONS OF INDIANGRASS FOR COMPONENTS OF BIOMASS YIELD

Arvid Boe
Plant Science Department
South Dakota State University
Brookings, SD  57007

ABSTRACT

Indiangrass (Sorghastrum nutans (L.) Nash) is an important component of the tallgrass and mixed grass prairies of North America and is currently being evaluated for its potential for biomass feedstock for biofuel production. The objectives of this study were 1) quantify morphological differences between two populations of Indiangrass from relict prairies in eastern SD (distance between natural populations was about 200 km), and 2) determine each population's potential for biomass feedstock production. Bulk seed was collected from populations near Elk Point and Aurora, SD. Spaced-plant nurseries composed of 5 replications of 8-plant plots were established at Brookings and Aurora, SD. Data collected for 2 consecutive years were phytomers tiller\(^{-1}\), dry matter per plant (at seed maturity), and for each phytomer, blade, sheath, and internode lengths and dry weights (at mid-anthesis). Data were analyzed with ANOVA with populations and phytomers fixed. The populations were morphologically distinct. Plants from the southern population had more phytomers tiller\(^{-1}\), larger organs, and produced more biomass. Thus the southern population was determined a better source germplasm for breeding for biomass production in Indiangrass adapted to eastern South Dakota.