Forage Focus - Research Updates- March 2010

South Dakota - Biomass from Little Bluestem on Dry Prairie Soils?

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Little bluestem [(Schizachyrium scoparium (Michx.)] was the most important dominant species of uplands in the tallgrass prairie. Presently, it is a dominant species mostly on sandy soils in the mixed-grass prairie region of the U.S. and Canada. This wide geographic adaptation to dry soils suggests that little bluestem has potential for biomass production in areas unsuitable for most other grass species in the North American steppe.

Research objectives included: 1) describe the morphology (plant structure) and determine the distribution of biomass among the main stem and axillary components of little bluestem, and 2) determine genetic variation (breeding-improvement potential) for morphology and biomass production in 'Camper' little bluestem.

Morphological analysis was conducted on tillers (main shoots) collected from natural populations in South Dakota and Montana and from pastures of Camper and a 'Badlands' ecotype in eastern South Dakota. Sixteen genetic types of Camper were evaluated for 3 years at 2 locations to determine the breeding-improvement potential for biomass.

Major branch position and leaf and stem internode lengths and weight of individual branches of natural and selected populations were related. Breeding-improvement potential was evident for branches/tiller, tillers/plant, weight/tiller, axillary branches/tiller, and biomass (range of 0.22-0.85 lb/plant). However, the relationship between locations for biomass was not significant for genetic types due to genetic differences in phenotypic plasticity (plant structural responses to stress).

Excellent survival over 2 winters for all genetic types indicate that Camper little bluestem has adequate winter hardiness to serve as a source population for cultivar development for biomass in the northern Great Plains.

Nursery in Aurora, SD, 5 miles east of Brookings; shows headed but pre-anthesis (for forage) - July 2008

Nursery in Aurora, SD, 5 miles east of Brookings; shows mature seed (for biomass) - October 2006