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Leafiness in forage grasses is generally considered as an important characteristic because of its relationship to forage quality and acceptability of the forage to livestock. Leafiness, which may be expressed as leaf percentage, leaf-stem ratio, number of leaves per stem, leaf weight, or leaf yield, is not always clearly defined in the literature. These measurements may not be closely related, as size and weight of the stem will materially influence the first two. Visual rating is the most common and practical method of evaluating leafiness in a breeding program. However, this rating may leave some question as to the specific factor or factors actually being evaluated, especially if plants or lines differ widely in leaf width, stem size, and plant height. Repeatability of ratings and agreement between the ratings of two or more individuals also are problems in leafiness evaluations if the character is not well defined. A second factor in selecting for leafiness among individual plants is the degree of expression of the character in broadcast or row plantings and in mixed stands. For these reasons studies have been conducted in an effort to characterize leafiness in blue panicgrass and to define more clearly the factor or factors being evaluated in visual ratings.

Blue panicgrass is a warm-season, perennial, tall bunchgrass introduced from Australia, India, and South Africa. The plants grow to a height of 4 to 7 feet and have short, bulbous rhizomes. Stems branch freely at the nodes and become coarse, woody, and unpalatable at maturity. The grass is usually grown in rows under cultivated field conditions or in sparse stands under range conditions. Blue panicgrass forage is high in protein content if harvested before maturity, and the leaves remain succulent until seed maturity. An unselected plant population is variable in leaf width, stem size, and plant height. Repeatability of ratings and agreement between the ratings of two or more individuals also are problems in leafiness evaluations if the character is not well defined. A second factor in selecting for leafiness among individual plants is the degree of expression of the character in broadcast or row plantings and in mixed stands. For these reasons studies have been conducted in an effort to characterize leafiness in blue panicgrass and to define more clearly the factor or factors being evaluated in visual ratings.

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In a review paper on breeding perennial forage grasses, Hanson and Carnahan (3) suggest that leafiness may be increased through selection, and that progress in the increase may be enhanced by practicing selection for characters such as disease resistance, maturity, growth cycle, and growth habit. Anderson and Aldous (2) pointed out that late plants tend to be somewhat leafier than early plants in *Andropogon scoparius* Michx. Hanson and Carnahan (3) recommended sampling progeny tests and variety trials to obtain quantitative data on leaf-stem ratios. Law and Anderson (5) increased the leaf area of *Andropogon furcatus* (gerardi) plants more than 12 times through 5 generations of selection in open-pollinated lines. At the same time, the mean number of culms per plant was increased from 57 to 148.

Tsiang (7) reported differences among selected bromegrass clones and also among their 1-year-selfed progenies for leafiness and degree of culmage. Parent-progeny relationships indicated a low degree of heritability. Degree of culmage and yield were significantly related. Weiss et al. (8) showed a significant (moderately high) degree of relationship for leafiness between parent clones and single-cross progeny.

Kramer (4) stated that spaced-plant nurseries may be used to evaluate such characters as disease reaction, rate of spreading, maturity, and height. Attempts to correlate yields of strains tested as spaced plants with yields when tested in other types of plots have proved unsuccessful for the most part. Ahlgren et al. (1) found little or no relation between estimated yields of Kentucky bluegrass selections grown in space-planted nursery rows and yields in mass seedings. Stapledon and Davis (6), on the other hand, found good agreement between the general trend of data collected on single plants and row plantings of strains of 22 species of grasses and clover with their performance in broadcast field plots. It would appear quite possible for a plant normally grown in rows to show a better relationship to spaced-plant performance than a plant normally grown broadcast or in mixed stands.

PROCEDURES

Individual blue panicgrass plants were selected for apparent leafiness from an original source nursery established as seedlings in 1956 and from a self- and open-pollinated progeny nursery.