

TECHNICAL NOTES

LEAF LONGEVITY AND CRUDE PROTEIN CONTENT FOR ROUGHLEAF RICEGRASS IN THE BLACK HILLS

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Roughleaf ricegrass (*Oryzopsis asperifolia* Michx.) (Figure 1) occurs on wooded slopes throughout northern United States, southern Canada, and the Rocky Mountains (Hitchcock, 1951). In the Black Hills of South Dakota it is a common, although not an abundant, understory species in many of the ponderosa pine (*Pinus ponderosa* Laws) stands. Pase (1958) found that herbage production for the grass ranged from 12 to 111 air-dry pounds per acre on 31 ponderosa pine sites. Roughleaf ricegrass leaves, unlike those of associated grasses in the Black Hills, remain green, at least in part, throughout the winter. This characteristic and the speculation about the nutritive value of the overwintering leaves prompted an investigation to determine the longevity of individual leaves and their crude protein content. To determine leaf longevity six plants were marked and 90 leaves were tagged and measured during the 1957-59 observation period. These plants were growing under a mixed stand of white spruce (*Picea glauca* (Moench) Voss) and pon-

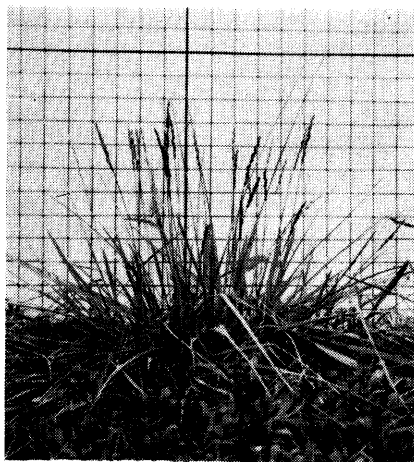


FIGURE 1. Roughleaf ricegrass plant in the seed maturing stage photographed on June 2 against a 1-inch grid. The long leaves with rolled tips are partially dried 1-year-old leaves. The shorter and broader leaves are new leaves of the current year.

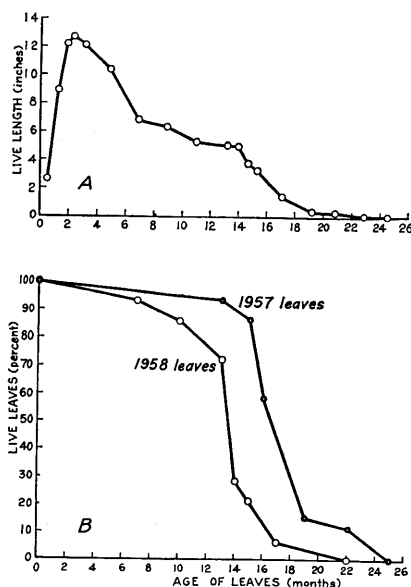


FIGURE 2. (A) Average length of green part of roughleaf ricegrass leaves in relation to age. (B) Longevity of leaves that began growing in 1957 and 1958.

derosa pine on a south-facing slope near a canyon bottom 14 miles northwest of Rapid City in the Little Elk Creek drainage.

The elevation was approximately 4,400 feet. Annual precipitation was believed to average 21 inches. Crude protein of roughleaf ricegrass herbage was determined at several locations and at regular intervals over a 3-year period.

The maximum life of the green parts of individual leaves of the six marked plants was approximately 25 months. However, considerable variation existed among leaves and between the 2 years when observations were most complete (Figure 2). Most of the 1957 leaves lived 17 months; whereas, most of the 1958 leaves lived 11 to 16 months. Leaves produced in early spring began to dry by late summer. About 5 inches of these leaves were still green the following spring when new leaves began to appear during April and May.



FIGURE 3. Crude protein content of leaves of various ages.

Crude protein of the green part of the overwintering leaves averaged 8.4 percent for material collected about May 20 during the 1957-59 period (Figure 3). Crude protein content of the developing herbage and flower stalks averaged 12.6 percent in early June and declined to 8.4 percent in mid-October. Although no determinations were made during the winter months, the same crude protein content

¹ Central headquarters maintained in cooperation with Colorado State University at Fort Collins. Research reported here was conducted in cooperation with the South Dakota School of Mines and Technology at Rapid City.

in October and in the following May suggests that this level prevailed throughout the winter. If so, this is a distinct contrast to some of the associated grasses. If the relatively high crude protein content of roughleaf ricegrass is present throughout the winter months, this could make it a valuable fall, winter, and spring forage for wildlife. Casual observations indicated that deer and rabbits fed on this grass but the extent of its contribution to the diet of either was unknown.

Still another characteristic of roughleaf ricegrass is of interest. Flower stalks appeared at the same time the new leaves were elongating in early spring. The grass was in flower in mid- to late-May where the six plants were being measured. By the time maximum leaf length had been attained, seed was matured and the flower stalks had become prostrate. The flower stalks remained throughout the summer period as radiating spokes from the plant center.

LITERATURE CITED

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