Effect of Clipping Small Grains on Composition and Yield of Forage and Grain

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RANCHERS, farmers, and dairymen in the wheat-growing areas of the Southwest normally pasture fall-sown cereals in the autumn, winter, and spring. The usual fee for grazing privileges ranges from $1 to $3 per month for mature cows. Rates as high as $9 per month for a cow and calf have been charged in seasons when pastures were short and grazing areas were at a premium.

This experiment was conducted to determine (1) how late in the spring cereals can be grazed economically, (2) the relative forage production, (3) the chemical composition of the forage, and (4) the subsequent yields of small grains as affected by different clipping treatments.

The experiment was conducted at the Southern Great Plains Field Station, Woodward, Okla., and the chemical analyses were made at the Oklahoma Agricultural Experiment Station, Stillwater, Okla.

Materials and Methods

A total of 24 small grain varieties or mixtures of varieties were grown in the test from 1939 to 1944. Five varieties of wheat (Cheyenne, Tenmarq, Blackhull, Turkey, and Early Blackhull), one strain of rye (a Rosen type common to the area used for fall and spring seedings), and Ward winter barley were used in the original test and in comparison with subsequent varieties grown, except that Blackhull, Turkey, and Early Blackhull were not grown after 1942.

This test was planted in three-row plots each 1 rod in length and replicated 15 times unless indicated otherwise.

The soil was a St. Paul very fine sandy loam with a red subsoil. The experiment was on clean fallow each year.

Clipping of the center row of each three-row plot with hand shears was classed as severe and approximated severe grazing by sheep. The two border rows, harvested with a lawn mower, were considered as moderately clipped. The mower blade set 1 inch above a flat surface left appreciable prostrate growth approximating moderate pasturing by cattle.

Clipping on specified plots was ended on or about March 5 on three plots, March 15 on three plots, April 1 on three plots, April 15 on three plots, and May 1 on three plots. Rain, snow, drouth, etc., occasionally made it necessary to deviate from the designated date by one to several days, and in a few instances no harvest was made due to lack of growth.

The clippings from each row, placed in a No. 20 bag, were weighed and then stored. The forage was stirred daily until danger of molding had passed after which it was allowed to stand until a nearly constant air weight was reached. Composite samples of the dry forage were harvested in 1942-43 and 1943-44 were analyzed for nitrogen, phosphorus, and calcium.

Climate and Soil Moisture

Climatic conditions were typical of the Southern Great Plains area. Annual precipitation ranged from 18.09 inches.

The lowest temperature encountered was -11°F.

In the two seasons 1938-39 and 1940-41 were nearly ideal and high yields were obtained. The area was extremely dry and the crops did not emerge. Although good stands were obtained, growth was slow for clipping prior to April 1. Subsequent conditions were conducive to only moderate growth. In 1941-42 season which followed heavy rains in October seemed extremely favorable throughout the year despite moderately favorable precipitation and temperatures. Soil moisture at seeding time was ample for prompt germination, but fall temperatures were too low for vigorous growth. Protracted spring periods of drouth interrupted only by light showers were detrimental to small grains. The fall of 1942 emergence was slow, but good stands finally emerged. The cereals suffered from drouth only once and pasturing time.

No appreciable disease, insect, or rodent injury occurred in any season.

Results Obtained

GREEN AND AIR-DRY FORAGE YIELDS

The average air-dry forage yields of the various varieties and mixtures of wheat, oats, barley, and rye grown in 1939 (Table 1) show considerable variation due to variety, weather, and clipping time. The forage yield to April 15 of Fulcaster wheat exceeded those of any other varietal combination or variety in the winter period. Winter oats produced less than 1943-44 except the fall-sown spring barley and fall-sown spring oats. It was thought that spring oats, or spring sown with wheat would make more growth than wheat seeded alone and by spring would leave a pure stand of wheat for pasture and subsequent grain harvest. However, combinations of Cheyenne wheat and fall-sown spring oats did not yield significantly different from that of Cheyenne wheat and spring oats did not produce combinations of Cheyenne wheat and fall-sown spring oats did not produce significantly different from that of Cheyenne wheat and spring oats did not produce combinations of Cheyenne wheat and spring oats did not produce.