BROMEGRASS, Bromus inermis Leyss., the leading cultivated grass in the eastern half of Kansas, is widely grown for pasture, yet planting is limited by the lack of adapted seed due to the inability of bromegrass to maintain vigorous growth over a long period of years. The first two or three seed crops are usually large when produced on fertile soils, but yields of both seed and forage generally decrease rapidly after a time. When bromegrass fields become unthrifty and fail to produce well they are commonly said to be "sod-bound". Some growers are able to maintain yields of grass for several seasons by growing a legume, preferably alfalfa, with the bromegrass, but its effect is not permanent nor does the practice accomplish its purpose under all conditions.

The increased use of bromegrass has been further hindered in Kansas by the fact that farmers, unable to obtain adapted seed, have often purchased seed of the northern strains which are unadapted to the growing conditions of the southern part of the bromegrass region. As shown by Newell and Keim (7), the northern types produce less vigorous seedlings under the short days of fall and early spring, are less productive, and are less tolerant of drought and heat. They produce the bulk of their growth later in the spring and are therefore more likely to suffer reductions in yields from the heat and possible drought of summer. Having once failed with northern bromegrass strains, a farmer is likely to be cautious about planting bromegrass again. Therefore, if maximum use is to be made of bromegrass in Kansas, it is necessary that an adequate supply of adapted seed be made available.

Since nitrogen fertilizers have been shown by many workers (1, 3, 4, 5, 6) to be beneficial in both seed and forage production of bromegrass and other grasses, a program of testing the effect of nitrogen under Kansas conditions appeared desirable.

PROCEDURE

Most of the experimental information on pasture fertilization has been obtained under more humid conditions than those which normally occur in Kansas. Since it was necessary to obtain information concerning the effect of commercial fertilizers on the productivity of bromegrass in Kansas, a series of tests was started in 1942 to determine the quantities needed for economical and continued productivity, especially of seed. All applications have been made as top-dressing.

1 Contribution No. 379, Department of Agronomy, Kansas Agricultural Experiment Station, Manhattan, Kan., cooperating with the Division of Porage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U.S. Dept. of Agriculture. Received for publication May 24, 1946.
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3 Figures in parenthesis refer to "Literature Cited", p. 1067.