REVEGETATION IN THE TALL GRASS PRAIRIE REGION

DONALD R. CORNELIUS

The tall grass prairie originally covered much of the eastern halves of Oklahoma, Kansas, Nebraska, and the Dakotas; also western Missouri and Iowa and part of Illinois and Minnesota. Much of this land was plowed for cultivation, except where it was too steep or rocky, as in the Flint Hills of Kansas or the Osage country of Oklahoma.

So long as the production of the cultivated crops was profitable, there was no desire to retire any of the cultivated land to grass. Within the past decade, however, drought, the effects of erosion, depletion of soil fertility, economic conditions, and labor shortage have started a trend toward retiring some of the cultivated upland in this section to grass for pasture or hay. Introduced grasses are commonly recommended for the eastern part of the tall grass prairie, but farther west and south native species withstand the environmental conditions better than any grasses thus far introduced. Since the use of these native species for revegetation plantings is very recent, little experimental work has been done with reference to methods of establishment on cultivated land.

MATERIALS AND METHODS

A 20-acre tract of cultivated upland approximately 9 miles southwest of Manhattan, Kans., was selected for experimental planting. The soil, residual from limestone, is Idana silt loam. Erosion had been moderate to severe with gully formation starting. Approximately one-half of the top soil had been removed by erosion, leaving only 4 inches above the B horizon and less where gullies had started. The slope is approximately 5%.

In 1940 a grass seed mixture was planted which included the following species: Andropogon furcatus, big bluestem; Andropogon scoparius, little bluestem; Bouteloua curtipendula, side-oats grama; Panicum virgatum, switchgrass; Bouteloua gracilis, blue grama; and Buchloë dactyloides, buffalo-grass. That seeded in 1941 and 1942 did not contain seed of the last two species, but had Sorghastrum nutans, Indian-grass, added to the first four species listed. The amount of seed for each species making up the mixtures, expressed as rate in pounds per acre for each of the three years, is given in Table 1.

Four types of seedbed were tested. Sudan grass stubble, millet stubble, and plowed oat land were used in 1940, 1941, and 1942. Sweetclover stubble was used in 1941 and 1942. Plots were 1½ acre in size. A grain drill was used in planting all of the crops which preceded the grass planting. The Sudan grass and millet grown in 1939 to provide stubble for the 1940 grass planting were injured by chinch bugs. The Sudan grass was especially damaged and no seed was produced, although the plot was not clipped. All of the plots grown in 1940 to provide stubble for the 1941 grass plantings were clipped high in the summer to prevent seed production. All clipped material was left on the land. The plots grown in 1941 to provide stubble for 1942 were not clipped and seed was produced. Considerable volunteer Sudan grass emerged with the grass seedlings in 1942 but volunteer millet gave no trouble. The volunteer sweetclover emerged before grass planting time and was controlled by double disking before planting the grass seed. In all other cases the land was lightly disked in late spring just before the grass was to be planted.

1Contribution from the Nursery Division, Soil Conservation Service, U. S. Dept. of Agriculture, Manhattan, Kans. Received for publication September 10, 1943.

2Associate Agronomist.