

Range Reseeding in Texas and Oklahoma

W. M. NIXON

Regional Agronomist, Soil Conservation Service, Fort Worth, Texas

ABOUT 7,000,000 acres of eroded and depleted cropland in Texas and Oklahoma should be returned to permanent grass if erosion is to be controlled and the land made safely and permanently productive.

In addition, there are about 14,000,000 other acres of depleted grazing land with few if any desirable grasses remaining. This land too needs to be seeded or overseeded if it is to provide an economic return within the next several decades.

To revegetate this vast acreage a huge quantity of seed is required. Many commercial dealers are supplying seed, but to date they have not been able to meet the demand. During the past year, about 3,512,000 pounds of seed of native tall and mid grasses were harvested in northeastern Oklahoma by the Soil Conservation Service, soil conservation districts and district cooperators. The harvest was made up of big bluestem, little bluestem, Indiangrass, sand bluestem, sideoats grama, sand lovegrass, switchgrass, blue grama, hairy grama, Texas bluegrass and Canada wildrye. As a result of this big harvest more acres have been seeded in Texas and Oklahoma to these good grasses than ever before.

Conditions leading to the big Oklahoma seed harvest were watched carefully. Soil Conservation Service technicians in the field and from regional headquarters searching for seed-producing areas noted the favorable rains received in northeast Oklahoma during the normally hot, dry summer months. By mid-September it was evident that a bumper seed crop was assured. Arrangements were made for dozens of 12- and 14-foot combines from

the wheat country to move in and harvest the native grass seed.

Soil conservation district supervisors, district cooperators, Soil Conservation Service technicians, combine operators, and others worked long hours harvesting the crop. One rancher obtained 17 self-propelled combines and harvested several hundred thousand pounds of seed from meadows and pastures on his own ranch.

The seed was stored in fair ground buildings, abandoned army camps, and in the half-mile long bomber plant at Tulsa, Oklahoma. The seed was then processed for planting.

The seed is being used not only in the normal soil conservation district work but in the agricultural flood control program on the Trinity and Middle Colorado River watersheds in Texas and the Washita River watershed in Oklahoma and Texas.

It is conservatively estimated that 150,000 acres in Oklahoma and Texas were seeded to these high quality grasses in the spring of 1949. About 75,000 acres were seeded in the Washita River flood control watershed in Oklahoma. Up to the end of 1948 there had been 1,375,000 acres of grass established on the ranches and farms of soil conservation district cooperators in Oklahoma and Texas. In addition, 76,000 acres had been established on land utilization projects in these states.

King Ranch bluestem is a comparative newcomer among conservation grasses, becoming immensely popular in Texas and Oklahoma. It is not a native grass but has been growing for 30 years on the King Ranch in South Texas. Observing that the grass had spread from a small

test plot for miles over the ranch, employees of the San Antonio nursery of the Soil Conservation Service gathered 75 pounds of the seed in November, 1939. A test planting at the nursery showed this bluestem strain to be outstanding. Trials by soil conservation districts have been almost uniformly successful. It is a rugged grass that withstands low temperatures as well as heat and drought.

sale to others. As a result of this intensified effort, it is hoped that adequate supplies of the desirable grasses will be available in the near future.

Little grass seeding equipment was available up until a few years ago. The Soil Conservation Service developed grass seed drills which would do an efficient and economical job of planting. Drills are now in use in soil conservation districts



PHOTO. NO. 1

This field of King Ranch bluestem near Weatherford, Oklahoma, was planted with clean seed at the rate of $3\frac{1}{4}$ pounds per acre in 36-inch rows April 5, 1948. On August 10 a hundred pounds of 16-20-0 fertilizer per acre were applied. About the middle of October nearly 100 pounds of seed per acre were harvested.

It is palatable to cattle and other livestock. Seed sources have been gaining rapidly in recent years but demand still far exceeds supply. King Ranch bluestem seed harvested last year in Texas and Oklahoma totaled nearly 120,000 pounds.

Soil Conservation Service nurseries are making available limited amounts of scarce grass seed primarily for planting for seed production purposes. Many soil conservation districts have combines and are harvesting grass seed to meet their own needs of district cooperators, and for

which will plant both rough and clean seed. Many of the drills are equipped with fertilizer distributors. Numerous other seeding methods have been devised which can be used when drills are not available.

To get a good stand of grass in the shortest possible time, care and patience prove profitable in the long run.

Land preparation for seeding grass might involve planting a non-competitive cover crop one year in advance of seeding where wind erosion is a problem, or grow-

ing a legume crop to add nitrogen and organic matter where the soil is seriously eroded or depleted. In most of the western part of Oklahoma and Texas cover in which to seed is definitely recommended. Seedings made in weed cover are not usually so successful as those in non-competitive cover. Clean-tilled land is seeded only if wind erosion is not a hazard. In many areas, even though wind erosion is not a hazard, a dead cover in which to seed is desirable. A firm seedbed is desirable under all conditions. Sand lovegrass has been successfully established by drilling or broadcasting without any land preparation.

Seed of high purity and germination should be used. The method, time, rate, and depth of planting vary with the species being planted. It is not possible to give a detailed explanation of these here, but some general principles will be pointed out.

Fertilizer will prove profitable in some instances.

Mowing or otherwise controlling weeds is usually necessary during the first growing season.

Young grass stands need protection from grazing until the plants are well established and are able to survive trampling. This usually means total exclusion of livestock for two years.

Many grasses have delayed germination and good stands are possible the second year, even though they look poor the first year. So it is advisable not to plow seeded areas until after the second growing season and it has been definitely determined that there is no chance for a stand to be obtained.

Optimum dates for seeding warm season grasses usually range from February through March. However, some fall plantings are made in south and southwestern Texas. July or August appears

to be the best time for seeding in the Trans-Pecos area.

Best seeding dates for cool season grasses are from September 15 to October 15. Seeding rates vary greatly, depending upon the quality of the seed, as well as how seed are processed; however, seeding rates of native grasses alone or in mixtures usually range from 10 to 15 pounds per acre. The seeding rate should be based on an intended stand of about 10 seedlings per square foot. Seeding rates of small-seeded grasses such as sand lovegrass and the introduced lovegrasses are of course much lower, being one pound or less per acre.

Seeding depth ranges from $\frac{1}{4}$ to 1 inch, depending upon kind of grass being seeded, kinds of soils and climatic conditions.

Reestablishing desirable grasses on depleted rangelands badly infested with brush presents a special problem. Wherever brush has been removed sufficiently for a machine to operate, it is believed that drilling is the most effective method. There is a possibility that seeding attachments can be perfected for brush cutters or rollers.

Broadcast seeding is sometimes successful. Broadcasting, however, should be used primarily when land is too rough to get over with a drill.

Use of the airplane for seeding large areas of rangeland has been proposed. Several hundred acres were seeded the past spring in Oklahoma and Texas by plane, but results are as yet inconclusive. To date, most airplane seedings of native grass have been disappointing.

The eccentric disc, with a cultipacker seeder attached behind, has been used with some success in Arizona in seeding rangelands. Some field trials are now being made in soil conservation districts in Texas.

The species of grass or mixtures seeded often vary on each farm or ranch, depending upon the types of pastures already in use, and the soil types. Pure seedings of grasses are usually made for some specific purpose; that is, for the production of green forage at a particular season, for seed production, or to control erosion.

growth during the spring and summer and furnish forage of high nutrient value when green. Weeping lovegrass also provides early spring and late fall grazing. It should be planted in pure stands.

Western wheatgrass, Canada wildrye, Texas winter grass, crested wheatgrass, and Texas bluegrass are cool-season



PHOTO. NO. 2

This 462-acre pasture of weeping lovegrass and sand lovegrass was planted in the spring of 1943 after the soil had been conditioned with sudan grass planted in 1942. This pasture wintered 100 cows six months in 1947, and 300 head were turned in for winter grazing in 1948.

While all the grasses can be successfully established in pure stands, the common practice is to seed mixtures because under average conditions, establishment of stands is more reliable with mixed grasses. Besides, under conditions in this area, native grasses occur mainly in mixtures.

The summer-growing grasses most commonly seeded are blue grama, buffalo-grass, sidecoats grama, sand lovegrass, Indiangrass, sand bluestem, big bluestem, little bluestem, switchgrass, and weeping lovegrass. These grasses make their

grasses. They furnish green forage in early spring and fall when the summer grasses are dormant. Field trials of intermediate wheatgrass are being made this fall. While a majority of seedings are made with mixtures of native summer-growing grasses, the use of pure seedings and possibly mixtures of cool-season grasses, should not be overlooked as a means of extending the "green pastures season." On farm-type livestock units, from 20 to 35 per cent of the grazing land could well be seeded to the cool season

grasses where soil types are suitable. Grasses which show particular promise for seeding in pure stands are western wheatgrass, Canada wildrye, crested wheatgrass, and weeping lovegrass.

King Ranch bluestem, Angleton bluestem, seacoast bluestem, slender grama, black grama, mesa dropseed, Boer lovegrass, Wilman and Lehmann lovegrass are

all good grasses which will be used much more extensively as more seed become available. With the exception of King Ranch bluestem, these grasses are best adapted to south and southwest Texas. King Ranch bluestem appears to have a wide range of soil and climatic adaptation, the extent of which has not been fully determined.