

CULTIVATION INCREASES GRASS PRODUCTION¹HARRY M. ELWELL,² Guthrie

The grass that holds together soil and water, the basis for life and civilization, is the foundation for soil conservation on much of the land. This fact has been demonstrated in our sixteen years of research at the Red Plains Conservation Experiment Station, Guthrie, Oklahoma. The results show that eroded, abandoned, and unused land can be put to food production by the establishment of pastures or hay meadows, or by using it as a source of native-grass seed.

EXPERIMENTAL PROCEDURE AND RESULTS

Research workers at the station in 1939 began a study of the effect of tillage on the growth of native grasses. Several grasses were seeded in 21- and 42-inch rows and in broadcast strips. The row plantings were cultivated twice with sweeps during the growing season. The results are given in Table I. In general, the broadcast areas have produced more hay and the row plantings more seed. In fact, the 42-inch rows produced an average of 2.4 times as much seed as the broadcast strips. Under favorable conditions, little-bluestem grass, planted in 42-inch rows, produced 432 pounds of seed per acre. This was 78-percent more seed than that grown on adjacent broadcast areas. The purity and germination were very high in the seed from the cultivated land and as a result, only about one-half the quantity ordinarily used would be required in seeding a given area.

TABLE I

*Effect of cultivation on yield of grasses on shallow soils,
Guthrie, Oklahoma^a*

Grass	Pounds per acre					
	Hay			Seed		
	21-inch rows	42-inch rows	Broadcast	21-inch rows	42-inch rows	Broadcast
Side oats ^b (<i>Bouteloua curtipendula</i>)	996	845	1425	69	57	37
Little bluestem ^c (<i>Andropogon scoparius</i>)	2589	2119	2586	189	240	56
Weeping lovegrass ^d (<i>Eragrostis curvula</i>)	4629	4199	5243	77	97	69
AVERAGE— for all grasses	2738	2388	3085	112	131	54

^a All row plantings were cultivated twice with sweeps during the growing season.

^b Four-year average for hay and three-year for seed.

^c Four-year average for hay and two-year for seed.

^d Six-year average for hay and five-year for seed.

¹ Contribution from Oklahoma Agricultural Experiment Station, and the United States Soil Conservation Service, Guthrie, Oklahoma.

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TABLE II

Effect of light disking on the yield of solid stands of grass

Kind of grass	Hay yields—Pounds per acre		
	Disked	Untreated	Percent gain
Bermuda	1224	971	21
Native bunch type	2419	2274	6
Average	1821	1622	11

^a Four-year average (1942-1945).

Investigations were also started in the spring of 1941 to determine the effect of cultivation on the forage production of solid stands of Bermuda and native bunch grass. The results are given in Table II. The yield of Bermuda grass was increased 26 percent and that of native grass 6 percent by disking the sod lightly every other year in March.

DISCUSSION

With the rapid development of machinery for seeding and harvesting, grass production offers a great opportunity to farmers and ranchers on eroded and shallow soils not suitable for arable farming. As a result of wise land use and promotion of good farming practices by the technicians of the Soil Conservation Districts, there is an increasing demand for native and other pasture-grass seed. From these research findings, the cultivation of grass is one method of producing this seed and also provides satisfactory returns from much of the formerly unused land.

Light row cultivation of tall native and introduced grasses has stimulated early growth and production of seed. Most native grasses, under central-Oklahoma conditions, produce seed in the fall. However, weeping lovegrass, an introduction from South Africa, produces seed in the late spring.

Thin or poor stands of grass that are not producing satisfactory forage yield may be improved by occasional light spring disking. Bermuda grass will respond to heavier disking than the common native grass. Tillage seems to prevent the grasses from dying in the center of the clumps and speeds up the decay of plant residue.