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SOUTHLAND BROMEGRASS:

A New Variety for Oklahoma Conditions

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SOUTHLAND BROMEGRASS

A New Variety

For Oklahoma Conditions

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Southland bromegrass is a vigorous, high-yielding variety with excellent seedling vigor. It has some resistance to the leaf diseases usually so serious on bromegrass in the south.

This new variety, developed in the Oklahoma Agricultural Experiment Station's grass breeding program, was named and released in September 1953. It was tested under the experimental designation "Oklahoma Synthetic."

Bromegrass has proved valuable for planted pasture in states north and northeast of Oklahoma. It is especially useful in mixed stands with a legume, particularly alfalfa. However, existing varieties were not well adapted to Oklahoma conditions. The southern strains, such as Achenbach, Fisher, Elsberry and Lincoln, have been used in the northeastern part of the state; but results were less satisfactory than those obtained with adapted strains in states to the north and northeast.

Description

The differences that generally separate the southern from the northern types of bromegrass are accentuated in Southland. It is rather coarse, broad leaved, and heavy stemmed, and creeps by means of vigorous rootstocks.

Like other bromegrass varieties, Southland is highly heterozygous and variable; no two plants are exactly alike, but all are of the same general type with heavy, coarse stems and wide leaves.

Individual plants average somewhat taller and are somewhat later in maturity than the average of other southern types. The variety has somewhat greater resistance to leaf diseases than most of the standard southern strains, but its chief advantage is in a significantly greater yielding capacity, greater seedling vigor, and generally better adaptation to southern conditions.

Growth produced in the seedling year is often outstanding when compared with other southern bromes. It has good seeding habits, although all bromegrass seed produced in the south tends to have a lighter test weight and poorer quality than that produced in the central and northern states.

Performance

FORAGE YIELDS

Table I shows the forage yield of Southland in comparison to five other southern bromegrass varieties. Southland was clearly superior in 1951. In 1952, all differences were greatly reduced due to a nitrogen shortage in the soil.* In 1953, all plots were fertilized with nitrogen at two different rates, 40 pounds and 80 pounds of actual nitrogen per acre. The differences between varieties not only reappeared, but were accentuated at the higher rate.

It appears that Southland has a somewhat higher productive capacity than other southern bromes, but the soil fertility level must be high for this capacity to be achieved after the first year.

The data in Table I also indicate that Achenbach is satisfactory under average conditions. Therefore it is being retained on A. & M. College's recommended list for Oklahoma.

Preliminary reports from tests in other states suggest that Southland is equal or superior to other bromes along the southern margin of present bromegrass usage. On the basis of present information it is likely that Southland will be useful in Kansas, Missouri, Kentucky, Tennessee, Arkansas, Oklahoma and Texas. It may also have some value as far as Virginia and the Carolinas, but the value of bromegrass in the deep south and the coastal states is questionable. It is suggested that growers in the upper south interested in bromegrass contact their own state agricultural colleges for specific recommendations.

* The tendency for varieties of bromegrass to even up in the later years of a test is well known, and is largely due to the soil fertility level.

FORAGE YIELD

TABLE I. — Forage Yield in Pounds Per Acre of Six Southern Bromegrass Varieties.*

Variety	1951		1952		1953				Average	
	Yield (Lbs./A)	Rank	Yield (Lbs./A)	Rank	40 lbs. N.		80 lbs. N.		Yield	Rank
					Yield	Rank	Yield	Rank		
Southland	1890	1	2384	1	1411	1	2445	1	2033	1
Achenbach	1369	3	2072	2	1284	2	1852	2	1644	2
Elsberry	1303	5	1928	3	1168	3	1558	4	1489	3
Lyon	1485	2	1672	5	1128	4	1477	5	1440	4
Lincoln	1315	4	1770	4	902	6	1423	6	1352	5
Lancaster	1228	6	1618	6	911	5	1615	3	1343	6
LSD**	413	—	557	—	275	—	652	—	—	—

* Average of five replications.

** Pounds per acre required for difference between varieties to be statistically significant (at 0.05).

Southland Bromegrass

SEED YIELD

Southland is a good seed producer when adequate amounts of nitrogen are available in the soil. Table II shows yields with various fertilizer treatments in a test at the Station's Perkins Farm in 1952.

GRAZING

Southland in combination with Oklahoma Common alfalfa has been under grazing tests on the Agronomy Farm at Stillwater for three years. The study does not involve other varieties of bromegrass, but some information concerning the performance of bromegrass in central Oklahoma was obtained. It was found that the stand was greatly reduced by a combination of drouth and low fertility on the slopes and areas of shallow soils, but in swales and bottoms where soil and moisture conditions are better, performance was good. An alfalfa-brome mixture should be confined to good bottomland soil in central Oklahoma, where bromegrass is adapted only to special sites and conditions. In the major area of brome usage in the state the grass is more tolerant to upland conditions (see map). In all areas, high yields can only be expected where soil fertility is high.

Origin

The first serious attempt to develop a variety of bromegrass (*Bromus inermis* L.) better suited to Oklahoma conditions was made in 1936 when a small field was seeded on the Agronomy Farm of the

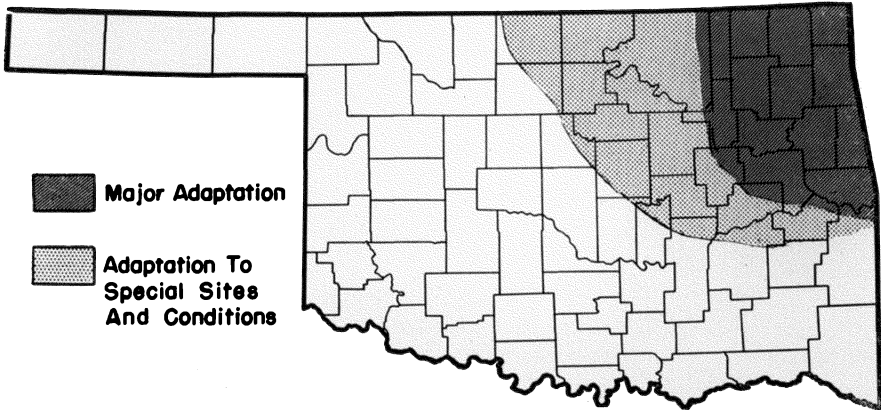
SEED YIELD

TABLE II.—Effect of Fertilizers on Seed Yield of Southland; Perkins Farm, 1952.

(Pounds of seed per acre)

Fall Treatment	Spring Treatment (lbs. per A. of ammonium nitrate):				
	None	100	200	400	600
None	148	358	361	437	505
Ammonium nitrate:					
100 lbs. per A.	295	477	428	606	615
200 lbs. per A.	395	422	539	562	---
Phosphorus and potash*	172	509	501	533	550
Phos. and potash plus:					
100 lb./A. ammonium nitrate	305	522	645	594	620
200 lb./A. ammonium nitrate	514	572	600	660	506

* 200 lbs. per acre of superphosphate (20% P₂O₅) and 100 lbs. per acre of muriate of potash (50% K₂O).



Map showing areas where Southland Bromegrass is best adapted. In the heavily-shaded area Southland is tolerant to upland conditions; but in the lightly-shaded area it should be confined to good bottomland soil. In all areas, high yields can be expected only where soil fertility is high.

Oklahoma A. & M. College at Stillwater. The seed was of Kansas origin. Later, selections were made from this field, a portion of which is still intact, and other selections were made from other introductions to the Station.

A number of agronomists contributed to the development of Southland, and the original source of some of the lines which make up the variety is rather obscure. At one time or another the bromegrass breeding work has been conducted by W. B. Gernert, Hi W. Staten, Melvin D. Jones, W. C. Elder, Roy A. Chessmore, and some of their students.

Eventually, five open pollinated lines were selected as showing superior characteristics and performance and were bulked to form the genetic background for the Southland variety.

Producing Certified Seed

In producing certified seed of Southland, the rules of the Oklahoma Crop Improvement Association must be followed. Considerable difficulty may be expected in the principal brome area in meeting the standards for weed seeds. Cheat (*Bromus secalinus*) is the most serious contamination and is difficult to control because its growth habit is similar to brome except for its annual habit. Careful cultivation of rows, roguing, and spraying with selective herbicides in the fall months will be very helpful.