

BROOKS GUAR

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Brooks guar, developed by personnel of the Crops Research Division of the USDA, the Texas Agricultural Experiment Station and Oklahoma Agricultural Experiment Station is a new high-yielding, branching, glabrous variety possessing resistance to major guar diseases, bacterial blight and *Alternaria* leaf spot. In the preliminary tests in 1962 and seven tests in 1963, Brooks averaged 431 pounds per acre more than the average of the commercial varieties, Groehler and Texsel (Table 1). The new variety should provide the additional seed yield necessary to make guar a potential industrial dryland crop for sandy soils in southwestern Oklahoma.

DESCRIPTION

Brooks is a new variety with branching growth habit, glabrous leaves and stem and field resistance to the guar diseases, bacterial blight and *Alternaria* leaf spot. The seed averaged 3 grams per 100 seed (15,120 seed per pound) and were similar in size to those of Groehler and Texsel (Table 2). In Oklahoma tests the plants ranged from 29 to 51 inches in height (Table 3). In 1963, Brooks matured 2 to 14 days later than Groehler or Texsel (Table 3). Brooks produced an average of 4.9 pods per raceme (Table 4). Randomly selected pods averaged 1.6 inches in length and averaged 6.5 seed per pod (Table 4).

Brooks plants can be easily distinguished from Groehler or Texsel by its branching habit of growth and by the absence of hairs on stems, leaflets and pods.

Two commercial companies evaluated 1963-grown samples of Brooks seed as a source of galactomannan gums and reported that Brooks was as acceptable for processing as present grown varieties.

RESULTS

Yield, seed size, percentage of dark seedcoats, plant height, maturity and pod characteristics are shown in Tables 1, 2, 3 and 4. The data

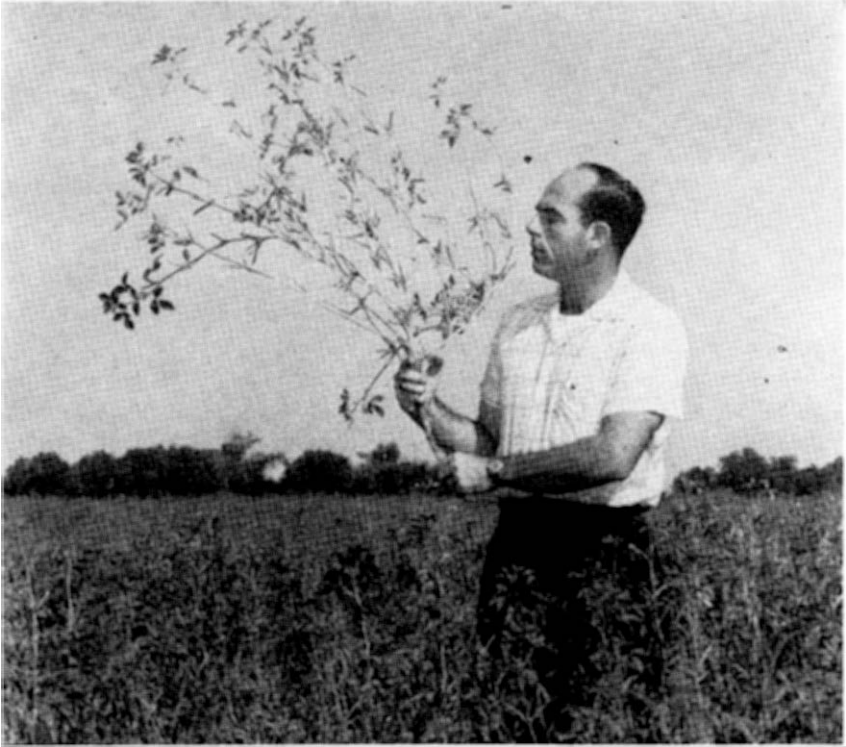


Figure 1. Branching plant from a field of Brooks guar on the Paradise Agronomy Research Station, September, 1963.

were obtained from test plots planted in rows spaced 40 inches apart.

Seed Yield:

The mean yields for eight tests conducted in Texas in 1962 and Oklahoma and Texas in 1963 were 1,283, 849 and 855 pounds per acre, respectively, for Brooks, Groehler and Texsel (Table 1). For the eight tests the mean seed yields for Brooks were significantly higher at the 5 percent level than Groehler in five tests and Texsel in seven tests. The pods of Brooks tend to set higher off the ground than those of Groehler and Texsel which should result in lower harvest losses.

The yield superiority of Brooks is attributed to its disease resistance. Bacterial blight killed 20 to 50 percent of the plants of Groehler and Texsel in the 1963 tests near Iowa Park, Texas, and Perkins, Oklahoma, while Brooks plants did not show symptoms of the disease. *Alternaria* leaf spot resulted in an estimated 25 to 75 percent leaf defoliation for

Groehler and Texsel in tests near Beeville, Texas, and Perkins, Oklahoma, compared with only 15 to 25 percent for Brooks.

Seed Size and Color:

In four Oklahoma tests Brooks had a mean seed size of 3.0 grams per 100 seed, which was very similar to that of Groehler and Texsel (Table 2). The percentage of seed with dark colored seedcoats averaged 1.7, 2.3 and 2.9 percent, respectively, for Brooks, Groehler and Texsel in the four Oklahoma tests (Table 2). Unwrinkled seed with bright or natural colored seedcoats are more desirable for processing.

Plant Height:

In four Oklahoma tests the plant heights of Brooks, Groehler and Texsel averaged 41, 40 and 42 inches, respectively (Table 3).

The branching habit of Brooks provides excellent ground cover for late season weed control.

Maturity.

Brooks guar matured 2, 6, 14 and 14 days later than Groehler or Texsel in the four Oklahoma tests near Mangum, Tipton, Stratford and Perkins, respectively (Table 3). In the 1963 tests at Iowa Park, Texas, the dates of the first mature pods were July 30, August 3 and August 9 for Texsel, Groehler and Brooks, respectively.

ORIGIN AND HISTORY

Brooks guar (Groehler 1-2) originated from the progeny of a single

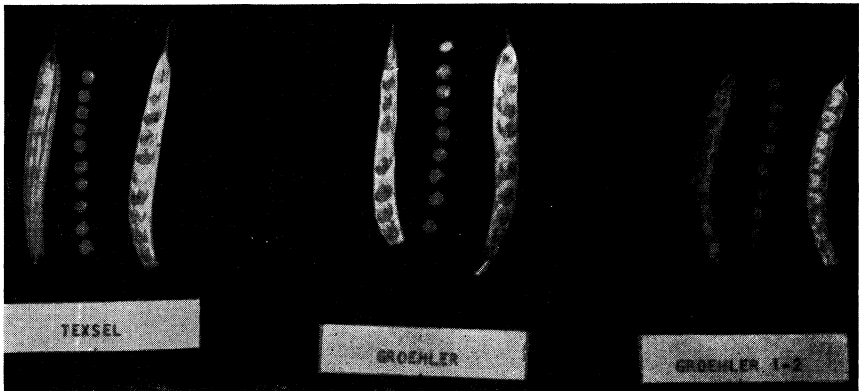


Figure 2. Seed and pods of Texsel (left), Groehler (center) and Brooks (right) guar grown in 1963.

glabrous plant selected in a field of Groehler in 1959 at Iowa Park, Texas.

The original plant selected by Brooks¹ was apparently an advanced generation progeny of a natural cross between Groehler and S441. Groehler is a medium tall, basal branching, pubescent commercial variety highly susceptible to the major diseases attacking guar. S44-1 is a tall, late maturing, branching, glabrous selection with resistance to bacterial blight and *Alternaria* leaf spot and with the first pod set 10 or more inches from the ground. After further selection and progeny testing the strain was advanced to the 1962 preliminary variety tests in Texas and Oklahoma. In 1963, Brooks was evaluated in the guar variety tests at four locations in Oklahoma and three locations in Texas.

From breeder's seed grown in 1963 and released to Foundation Seed Stocks, Inc., seed will be available in Oklahoma for foundation seed production in 1964.

Table 1. Mean seed yield of Brooks, Groehler and Texsel guar in eight tests conducted in Oklahoma and Texas during 1962-63.

Location	Year	Seed Yield (Pounds/Acre)			C.V. %	L.S.D.
		Brooks	Groehler	Texsel		5% level lbs/A
Mangum, Okla.	1963	1417	1517	1630	10.0	244
Tipton, Okla.*	1963	1582	1257	1193	14.5	285
Stratford, Okla.	1963	1341	954	829	22.2	396
Perkins, Okla.	1963	1682	462	993	20.2	416
Iowa Park, Tex.*	1962	956	327	245	33.1	336
	1963	1442	480	588	16.7	271
Chillicothe, Tex.	1963	1236	1344	968	12.1	223
Beeville, Tex.	1963	606	452	394	21.7	144
Mean		1283	849	855		

* Irrigated tests

¹Lester Brooks, Superintendent of the Wichita Valley Irrigated Experiment Station, Iowa Park, Texas.

Table 2. Mean seed size and percentage of dark seed in samples of Brooks, Groehler and Texsel guar grown in variety tests at four locations in Oklahoma, 1963.

Location	Mean Seed Size (grams/100 seed)			Percentage seed with dark seedcoats		
	Brooks	Groehler	Texsel	Brooks	Groehler	Texsel
Mangum	2.9	3.0	2.7	3.7	6.3	5.0
Tipton	2.8	3.1	2.8	0.7	0.3	0.3
Stratford	3.1	3.1	2.9	1.5	2.0	4.3
Perkins	3.4	3.0	2.9	1.0	0.7	2.0
Mean	3.0	3.0	2.8	1.7	2.3	2.9

Table 3. Mean plant height and maturity and planting dates for Brooks, Groehler and Texsel guar in four tests conducted in Oklahoma, 1963.

Location	Mean plant height (inches)			Maturity date			Planting Date
	Brooks	Groehler	Texsel	Brooks	Groehler	Texsel	
Mangum	51	46	47	9-9	9-7	9-7	5-27
Tipton	39	41	37	9-12	9-6	9-6	6-6
Stratford	29	29	34	9-18	9-4	9-4	5-14
Perkins	44	44	50	9-29	9-15	9-15	5-15
Mean	41	40	42	9-17	9-8	9-8	

Table 4. Comparison of pod characteristics for Brooks, Groehler and Texsel guar determined from 50 randomly selected pods for each variety on plants from the 1963 variety test near Perkins.

	Brooks		Groehler		Texsel	
	Mean	Range	Mean	Range	Mean	Range
Number pods per raceme	4.9	4.0- 6.0	7.4	3.0-13.0	12.7	7.0-18.0
Pod length (inches)	1.6	0.6- 2.4	2.0	1.3- 2.4	1.8	1.2- 2.3
Length of mature style (ins.)	0.2	0.1- 0.3	0.2	0.1- 0.3	0.3	0.1- 0.4
Number seed per pod	6.5	3.0-10.0	8.2	4.0-10.0	7.8	4.0-10.0