

KENTUCKY SOYBEAN PERFORMANCE TESTS—1971

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DEPARTMENT OF AGRONOMY
Lexington

LOCATION OF THE 1971
SOYBEAN PERFORMANCE TESTS



Acknowledgment is made to the Owensboro Grain Company, Owensboro, and the Ellis Elevator and Central Soya, Henderson, for their cooperation in the soybean tests at Henderson; also, to the county extension agents and farm cooperators listed below:

<u>Location</u>	<u>Soil Type</u>	<u>Date Planted</u>	<u>Row Width</u>	<u>Farm Cooperators</u>
1. Henderson	Calloway silt loam	June 7	30 in.	Huston Ginger
2. Hartford	Zipp silt loam	May 24	30 in.	Dane Milligan
3. Princeton	Crider silt loam	May 18	30 in.	
4. Clinton	Memphis silt loam	June 17	38 in.	L. A. Schwarts

(Extension and Experiment Station personnel who cooperated in the tests included Extension Agents Stuart Brabant, John Kavanaugh, Charles Padgett, and Extension Grain Specialists J. E. Herbek and M. J. Bitzer.)

Kentucky Soybean Performance Tests—1971

By D.R. Egli, Charles Tutu, J.W. Herron and Stuart Brabant

The objective of the Kentucky Soybean Performance Tests is to provide an estimate of the relative performance of soybean varieties in Kentucky. This information may be used by growers and seedsmen to select the variety that will give the highest total production for a specific situation. Experimental strains of soybeans provided by the U.S. Regional Soybean Laboratory are also tested at several locations in Kentucky.

Soybean acreage in Kentucky for 1971 was estimated to be 764,000 acres. This represents a 37% increase over 1970 and a 58% increase over 1969. Yield per acre for 1971 was estimated at 30 bushels per acre, which would result in a total production of more than 22 million bushels. This represents an increase in total production of 52% over 1970 and 69% over 1969. Yield per acre was 27 bushels per acre in 1970 and 28 bushels per acre in 1969.

EXPERIMENTAL METHODS

Soybean tests were conducted at four locations in the major soybean-producing areas of the state. The testing locations, soil types, date planted and row width are shown on the opposite page. Varieties were planted with each entry in three plots (replications) at all locations, with individual plots being 4 rows wide and 20 feet long. Individual plots at the Hartford location were 3 rows wide and 20 feet long. The seeding rate was approximately 10 viable seed per foot of row.

In the herbicide test conducted at Henderson the plot size was 4 rows 40 feet long. The herbicides were applied with a tractor-mounted boom sprayer. Chemicals were applied uniformly by using a constant pressure of 30 psi. All chemicals were applied in water at a rate of 28 gal/A. All preplant treatments were incorporated into the soil immediately after

application. The plots were cultivated once during the summer. The preplant treatments were applied on June 7; however, owing to rainy weather, the soybeans (variety - Cutler) were not planted until July 9 and the preemergence treatments were applied on this date. Because of the late planting date, no yield data were collected from the herbicide test.

Yield

A 16-foot section from each of the center rows was harvested for yield. Plants were cut by hand and threshed with a small nursery thresher. All branches and lodged plants were harvested from each plot. The yield of the varieties is reported as bushels per acre at 13% moisture.

Lodging

Lodging was rated on a scale of 1 to 5; 1 = almost all plants erect; 2 = all plants over slightly or a few down; 3 = all plants over moderately or 25%-50% down; 4 = all plants over considerably or 50%-80% down; 5 = all plants over badly.

Maturity Date

This is the date when the pods are dry and most of the leaves have dropped. Stems are also dry, under most conditions. Maturity may also be expressed as days earlier (-) or later (+) than a standard variety. Maturity dates were not recorded at all locations.

Height

Plant height was measured in inches from the soil surface to the tip of the main stem.

INTERPRETATION

An important step to profitable soybean production is the selection of good seed of the best variety. The Kentucky Soybean Performance Tests are conducted to provide information useful in making the selection.

Performance of soybean varieties is affected by many factors including season, location, soil type, and time of planting. A particular soybean variety is adapted for full-season growth in a band approximately 100 miles wide from north to south. Thus, the best variety in northern Kentucky may not be the best in southern areas. For this reason the Kentucky Soybean Performance Tests are conducted at several locations in the major soybean-producing areas of the state. Data from the location nearest to a particular soybean grower's farm probably provide the best estimate of the potential of the soybean varieties in that area.

Performance of the varieties will vary from year to year. The average performance of a variety over a period of years provides a better estimate of its potential than its performance in a particular year.

Small differences in yield are usually of little importance. The yield of two varieties at a single location may differ because of chance factors (difference in soil characteristics, fertility, or availability of moisture) even though the inherent yielding ability is the same. To decide if an observed yield difference is real, use the LSD (least significant difference) value quoted in the table. If the difference in yield is greater than the LSD value, you may be reasonably certain that the entries actually do differ in yielding ability.

RECOMMENDED VARIETIES

The following soybean varieties are recommended by the Kentucky Agricultural Experiment Station for use in Kentucky (listed in order of maturity):

(Early)	1. Wayne	7. *Custer
	2. Calland	8. Hill
	3. Clark 63	9. *Dyer
	4. Cutler	10. Dare
	5. Cutler 71	11. York
	6. Kent	12. Hood (Late)

*Soybean Cyst Nematode Resistant

These varieties have been tested for a minimum of three years in Kentucky and have been shown to be superior in yield and other agronomic characteristics. Varieties that are not on the recommended list are included in the tests to evaluate their potential, and some may eventually be added to the recommended list. Table 1 lists the characteristics and disease reactions of the recommended varieties.

New Varieties

Two new varieties, Calland and Cutler 71 were added to the recommended list this year. Calland was developed at Purdue University and released Aug. 31, 1968. Calland is approximately 2 days later in maturity than Wayne and 2 days earlier than Clark 63. Other characteristics of Calland are shown in Table 1. Tests over a period of several years in Kentucky have shown Calland to be somewhat higher yielding than Wayne.

Cutler 71 was also developed at Purdue University and released Feb. 15, 1971. Cutler 71 was developed through a back cross program to incorporate phytophthora root-rot resistance into Cutler. Consequently, Cutler 71 is very similar to Cutler in most agronomic characteristics including yield, but it is resistant to phytophthora root-rot while Cutler is susceptible to this disease. The characteristics of Cutler 71 are shown in Table 1. Seed supplies of Cutler 71 will not be available in large quantities until 1973.

Two varieties (Columbus and Mack) that were released in 1971 were included in the performance tests for the first time in 1971. Columbus was developed by the Kansas Agri-

Table 1. Characteristics and disease reactions of the recommended varieties.

Variety	Flower Color	Pubescence Color	Hilum Color	Maturity		Seeds per pound	Phytophthora Rot	Disease Reaction ^{3/}	
				1/	2/			Cyst nematode	Bacterial pustule
Wayne	white	brown	black	-16	III	2700	Sus	Sus	Res
Calland	purple	brown	black	-14	III	2600	Res	Sus	Sus
Clark 63	purple	brown	black	-12	IV	3000	Res	Sus	Res
Cutler	purple	brown	black	-9	IV	2600	Sus	Sus	Sus
Cutler 71	purple	brown	black	-9	IV	2600	Res	Sus	Sus
Custer	purple	gray	black	0	IV	3100	Res	Res	Res
Kent	purple	brown	black	0	IV	2600	Sus	Sus	Sus
Hill	white	brown	l.brown	+6	V	3800	Sus	Sus	Res
Dyer	purple	brown	black	+11	V	3000	Sus	Res	Res
Dare	white	gray	buff	+17	V	3500	M.Res	Sus	Res
York	purple	gray	buff	+18	V	2600	M.Res	Sus	M.Res
Hood	purple	gray	buff	+22	VI	3400	Sus	Sus	Res.

1/ Approximate number of days earlier (-) or later (+) than Kent.

2/ Maturity Group.

3/ Res = resistant, Sus = susceptible, M.Res = moderately resistant.

cultural Experiment Station and is approximately 9 days later than Cutler.

Mack was released by the Arkansas Agricultural Experiment Station and incorporates good yielding ability with resistance to the soybean cyst nematode. Since these varieties were released in 1971, seed will not be available in large quantities for several years.

Certified Seed

Always plant high quality seed of recommended varieties. Certified soybean seed is a reliable source of good seed. Certified seed has passed rigid field and laboratory standards for genetic identity and purity of a variety. Certified soybean seed also has good germination and freedom from noxious weed seed and other crop seed. The experiment station recommends that Kentucky certified seed be used whenever possible for growing a commercial crop of soybeans.

Herbicide Test

Data from the herbicide test at Henderson are presented in Table 8. Ratings are given as the percent control for both grassy and broadleaf type weeds. Percent control ratings were made on August 19 after the plots had been cultivated. These data represent the performance of these herbicides at one location and should be used in conjunction with Ky. Coop. Ext. Misc. 113-K, "Chemical Control of Weeds in Farm Crops in Kentucky—1972," which incorporates information from many locations.

Table 2. Henderson, Ky.

Variety	Yield (Bu/A)		Lodging ^{1/}	Height (in.) ^{1/}
	1970-71	1971		
Wayne	47.7	45.0	3.3	36.0
SRF-300	48.4	43.8	3.3	37.0
SRF-307	--	40.1	3.0	37.3
Galland	47.9	42.8	1.7	38.7
Clark 63	45.2	39.9	3.0	36.7
SRF-400	--	40.7	3.7	36.3
Cutler	47.5	44.3	1.8	38.0
Cutler 71	--	43.6	2.2	40.7
Kent	51.4	47.9	1.7	39.0
SRF-450	--	48.8	2.0	40.0
Columbus	--	43.2	3.5	41.0
Mack	--	38.7	4.0	32.7
Dare	50.7	48.8	3.2	34.7
York	53.7	47.0	3.3	38.0
Mean	49.1	43.9		
LSD		N.S.		

^{1/} 1971 Data Only.

Table 3. Henderson, Ky. Three-Year Summary 1969-71

Variety	Yield		Lodging	Height (in.)
	(Bu/A)			
Wayne	46.6		2.3	40.7
Clark 63	43.4		2.3	42.9
Cutler	49.5		1.7	42.0
Kent	48.1		1.8	44.0
Dare	45.7		3.1	40.9
Mean	46.7			

Table 4. Hartford, Ky.

Variety	Yield (bu/A)		Maturity	Lodging	Height (in.)
	1970-71	1971			
Wayne	35.1	32.0	1.0	1.0	33.0
SRF-300	--	34.3	1.3	1.3	33.3
Adelphia	34.1	22.8	1.0	1.0	23.7
Calland	42.2	35.6	1.2	1.2	34.3
Clark 63	39.6	34.7	1.5	1.5	37.0
SRF-400	--	34.6	1.5	1.5	37.7
Cuttler	43.9	43.2	1.2	1.2	36.3
Kent	39.5	38.7	1.0	1.0	35.3
Columbus	--	43.1	2.7	2.7	35.7
Dare	40.9	39.2	3.2	3.2	36.0
York	40.1	40.6	1.5	1.5	36.0
Mean	39.4	36.2			
LSD (.05)	7.3 bu/acre				

1/ 1971 Data Only.

Table 5. Princeton, Ky.

Variety	Yield (bu/A)		Maturity	Lodging	Height (in.)
	1970-71	1971			
Wayne	46.6	48.4	9/5	1.0	35.7
SRF-300	--	40.8	9/5	2.7	37.7
SRF-307	--	47.0	9/5	3.7	39.3
Calland	--	54.2	9/5	1.3	37.0
Clark 63	49.2	49.6	9/11	2.7	41.7
SRF-400	--	45.6	9/11	3.0	39.7
Cuttler	55.4	54.1	9/12	1.0	41.7
Cuttler 71	--	54.7	9/11	1.3	42.3
Kent	52.6	52.8	9/19	1.7	41.0
SRF-450	--	49.4	9/19	1.3	40.0
Columbus	--	41.7	9/25	2.0	47.3
Mack	--	43.6	10/7	2.3	40.7
Dare	41.9	40.7	10/9	1.7	40.0
York	46.9	45.3	10/10	1.7	39.7
Hood	45.2	45.3	10/12	2.0	41.3
Mean	48.3	47.5			
LSD (.05)	9.7 bu/A				

1/ 1971 Data Only.

Table 6. Princeton, Ky. Three-Year Summary 1969-71

Variety	Yield (bu/A)	Maturity	Lodging	Height (in.)
Wayne	45.5	0	2.5	39.8
Clark 63	45.8	+5	3.0	44.5
Cuttler	49.5	+9	2.4	43.3
Kent	49.2	+12	2.2	42.3
Dare	46.0	+32	2.8	40.0
York	49.4	+33	2.4	40.2
Hood	47.0	+36	2.7	41.1
Mean	47.5			

Table 7. Clinton, Ky.

Variety	Yield (bu/A)		Lodging	Height (in.)
	1970-71	1971		
Clark 63	30.1	22.4	5.0	45.3
SRF-400	--	27.0	5.0	47.7
Cuttler	32.6	24.4	5.0	41.7
Cuttler 71	--	25.1	4.3	46.3
Kent	33.2	27.2	4.7	44.0
Columbus	--	28.6	4.7	45.0
Mack	--	29.2	5.0	47.7
Dare	31.8	21.6	4.7	44.0
York	36.2	31.1	4.0	33.7
Hood	34.7	27.4	5.0	46.0
Lee 68	33.2	24.4	4.0	46.3
Pickett 71	--	27.6	4.3	45.7
Mean	33.1	26.3		
LSD (.05)	7.3 bu/acre			

1/ 1971 Data Only.

Table 8. Herbicide Test,^{1/} Henderson, Ky. 1971

Trade Name	Herbicide Common Name	Rate lbs Active Ingrid./acre	Percent Control		Crop Injury
			8-19-71 ^{2/} Grass	Broad-Leaf	
Amiben + Lorox Solo	amiben + linuron	2.5 + .83	92.5	87.5	20.0
Lasso + Lorox	naptalam + chloroprotham	3 + 3	90.0	60.0	15.0
Treflan + Lorox (Split) ^{3/}	atlachlor + linuron	2 + 0.5	95.0	87.5	5.0
Vernam + Lorox (Split) ^{3/}	trifluralin + linuron	.75 + 0.5	97.5	82.5	5.0
Lorox	vernolate + linuron	2 + 0.5	87.5	82.5	0
Preforan	linuron	1.0	95.0	92.5	7.5
Amiben	flourodifen	4.5	95.0	85.0	2.5
E1 149	amiben	3.0	100	87.5	7.5
No treatment ^{4/}	E1 149	2.5	100	67.5	20.0
			95.0	65.0	0

^{1/} Variety - Cutler

^{2/} Visual evaluation after cultivation

^{3/} Treflan and Vernam applied preplant, June 7, 1971. Lorox applied preemergence July 9, 1971.

^{4/} The no treatment plots were cultivated but received no chemical treatment.