Results of the KENTUCKY SOYBEAN PERFORMANCE TESTS—1970

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PROGRESS REPORT 191

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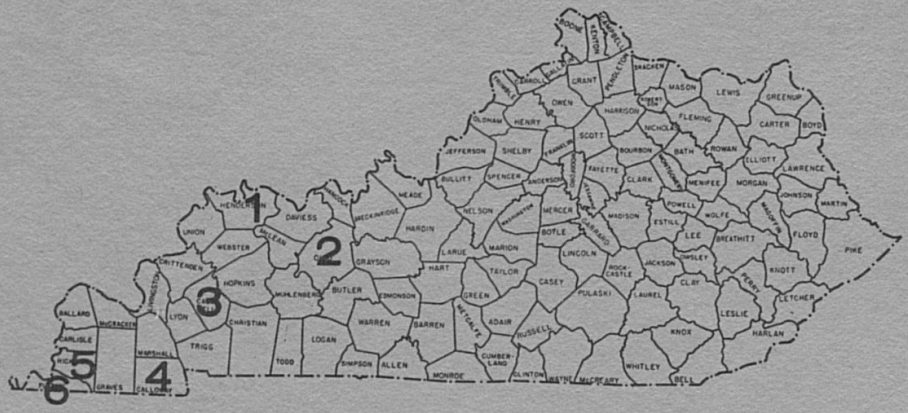
Lexington



LOCATION OF THE 1970 SOYBEAN PERFORMANCE TESTS

ACKNOWLEDGMENT

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

Location	Soil Type	Date Planted	Row Width	Farm Cooperators
1. Henderson	Calloway silt loam	May 27	30 in.	Huston Ginger
2. Hartford	Zipp silt loam	May 26	30 in.	Dane Milligan
3. Princeton	Crider silt loam	May 20	30 in.	
4. Murray	Crider silt loam	May 25	28 in.	Bun Hughes
5. Clinton				
(Conventional)	Memphis silt loam	May 28	38 in.	L. A. Schwarts
(Double Cropping)	Memphis silt loam	June 30	20 in.	L. A. Schwarts
6. Hickman		June 23	36 in.	James Hepler

(Extension and Experiment personnel who cooperated in the tests included Extension Agents Stuart Brabant, John Kavanaugh, Charles Padgett, and John Watts; Research Specialist Charles Tutt, and Extension Plant Pathologist, A. S. Williams).

RESULTS OF THE KENTUCKY SOYBEAN PERFORMANCE TESTS - 1970

Soybean production in Kentucky for 1970 was estimated at 14,392,000 bushels. Production in 1969 was 13,580,000 bushels and 12,349,000 bushels in 1968. Estimated average yield per acre was 28.0 bushels for 1970, which equalled the average yield per acre for 1969 and represents an increase of 1.5 bushels from 1968.

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.

EXPERIMENTAL METHODS

Soybean tests were conducted at six locations in the major soybean-producing areas of the state. The testing locations, soil types, date planted and row width are shown on 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 Hickman 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 double disked immediately into the soil after application. The plots were cultivated twice during the summer.

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 13.0 percent moisture.

Lodging

Lodging was based 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 availbility 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	6. Hill
	2. Clark 63	7.*Dyer
	3. Cutler	8. York
	4. Kent	9. Dare
	5.*Custer	10. 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.

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.

Soybean Cyst Nematode Test

The test located at Hickman (table 8) was planted in an area known to be infested with the soybean cyst nematode. This test consisted of the three varieties (Custer, Dyer and Pickett) that are resistant to this pest as well as their susceptible counterparts (Scott, Hill and Lee 68). The soybean cyst nematode (*Heterodera glycines* Ichinohe) attacks soybean roots, reducing root growth and thereby reducing uptake of water and nutrients. Infected plants are yellow, stunted, and low in yield. Varieties resistant to the cyst nematode should be grown in areas known to be infested with this pest. The cyst nematode can be spread in soil from an infected area, consequently, equipment and machinery should be carefully cleaned when moving from infected to non-infected fields. Generally, the cyst nematode resistant varieties do not yield as well as other varieties in areas *not* infected by the soybean cyst nematode.

Herbicide Test

Data from the herbicide test at Henderson are presented in table 10. Ratings are given as the percent control for both grassy and broadleaf type weeds. Percent control ratings were made on June 16 and September 9. The September 9 ratings were made after the plots had been cultivated. These data represent the performance of these herbicides at one location and should be used in conjunction with the leaflet "Chemical Control of Weeds in Farm Crops in Kentucky 1971," which incorporates information from many locations.

Table 1. Henderson, Ky. 1970 and 1969-70 Av.

Variety	Yield (Bu/Acre) 1969-1970	Yield (Bu/Acre) 1970	Lodging[1/]	Height (inches)[1/]
Amsoy	45.5	48.0	1.0	36
Calland	--	52.9	1.1	41
Wayne	47.4	50.4	1.0	39
SRF-300	--	52.9	2.3	41
Adelphia	47.2	46.5	1.0	33
Clark 63	45.2	50.5	1.5	43
Cutler	52.2	50.6	1.0	42
Kent	48.2	54.9	1.5	45
Custer	38.3	43.0	2.5	47
Hill	40.0	49.7	3.0	39
Dyer	44.2	53.1	4.0	39
York	--	60.4	1.7	43
Dare	44.1	52.5	3.5	43
Mean	45.2	51.2		
LSD (.05)		9.8		

1/ 1970 data only.

Table 2. Henderson, Ky., Five-Year Summary, 1966-70.

Variety	Yield (Bu/Acre)	Maturity[1/]	Lodging	Height (In)
Wayne	44.9	0	2.1	43
Clark 63	43.8	+4	2.0	45
Kent	45.4	+8	1.8	45
Hill	38.1	+24[2/]	2.5	37
Dare	40.0	+36[3/]	2.7	42
Mean	42.4			

1/ Includes 1966-69 data only.

2/ Did not mature before a killing frost in 1968.

3/ Did not mature before a killing frost in 1967 and 1968.

Table 3. Hartford, Ky. 1970

Variety	Yield (Bu/Acre)	Lodging	Height (In.)
Calland	48.7	2.5	38
Wayne	38.1	3.5	36
Adelphia	45.3	1.7	34
Clark 63	44.4	3.5	39
Cutler	44.6	3.5	39
Kent	40.2	3.2	38
York	39.5	2.0	43
Dare	42.5	4.0	44
Mean	42.9		
LSD (.05)	6.1		

Table 4. Princeton, Ky. 1970 and 1969-70 Av.

Variety	Yield (Bu/Acre) 1969-70	1970	Maturity 1/	Lodging 1/	Height (In.) 1/
Wayne	44.0	44.7	9/16	4.0	36
Adelphia	45.9	51.6	9/15	1.7	32
Clark 63	43.9	48.8	9/23	3.3	40
Cutler	47.2	56.6	9/23	3.7	40
Kent	47.4	52.3	9/23	3.0	40
Custer	42.7	47.6	9/24	5.0	52
Hill	50.2	47.1	10/6	4.3	32
Dyer	45.2	49.6	10/8	4.3	36
York	51.4	48.4	10/15	2.7	38
Dare	48.6	43.1	10/10	3.3	38
Hood	47.8	45.0	10/15	3.0	36
Lee 68 2/	44.2	45.9	10/20	3.7	41
Mean	46.5	48.3			
LSD (.05)		N.S.			

1/ 1970 data only.

2/ Lee in 1969.

Table 5. Princeton, Ky. Five-Year Summary, 1966-70.

Variety	Yield (Bu/Acre)	Maturity	Lodging	Height (In.)
Wayne	37.8	0	2.3	39
Clark 63	37.8	+6	2.4	42
Kent	40.9	+11	1.8	40
Hill	41.2	+26 1/	2.9	36
Dare	42.2	+33 1/	2.6	39
Hood 2/	43.2	+34 1/	2.4	39
Lee 2/	38.0	+40 1/	3.5	41
Mean	40.2			

1/ Harvested after a killing frost in 1967.

2/ Lee 68 in 1970.

Table 6. Murray, Ky. 1970 and 1969-70 Av.

Variety	Yield (Bu/Acre) 1969-1970	Yield (Bu/Acre) 1970	Maturity 1/	Lodging 1/	Height (In.) 1/
Wayne	41.5	43.0	9/20	4.0	38
Adelphia	38.8	39.2	9/18	2.0	33
Clark 63	39.2	36.1	9/21	5.0	40
Cutler	37.3	36.6	9/21	4.3	39
Kent	36.1	31.7	9/22	3.7	40
Custer	35.4	29.4	9/22	4.7	44
Hill	37.3	28.1	9/29	5.0	33
Dyer	37.8	36.2	10/20	5.0	37
York	48.8	42.9	10/14	3.0	40
Dare	49.3	42.1	10/15	5.0	40
Hood	40.0	36.0	10/17	3.0	37
Lee 68 2/	35.1	26.7	10/25	4.3	44
Mean	39.7	35.6			
LSD (.05)		5.6			

1/ 1970 Data only.

2/ Lee in 1969.

Table 7. Murray, Ky. Five-Year Summary, 1966-70.

Variety	Yield (Bu/Acre)	Maturity [1]	Lodging [2]	Height (In.)
Wayne	39.5	0	3.1	39
Clark 63	39.4	+4	3.1	43
Kent	39.9	+6	2.2	43
Hill	36.5	+8	4.0	37
Dare	43.0	+30	3.6	39
Hood	36.4	+30	3.0	38
Lee [3]	34.0	+34	4.0	39
Mean	38.3			

1/ 1967 not included.

2/ 1969 not included.

3/ Lee 68 in 1970.

Table 8. Hickman, Ky. 1970

Variety	Cyst Nematode Reaction [1]	Yield (Bu/Acre
Custer	Resistant	19.6
Scott	Susceptible	17.1
Dyer	Resistant	26.5
Hill	Susceptible	17.1
Pickett	Resistant	28.9
Lee 68	Susceptible	23.6
Mean		22.1
LSD (.05)		5.3

1/ See text for explanation.

Table 9. Clinton, Ky. 1970

Variety	Yield (Bu/acre)	Lodging	Height (in.)
Conventional [1/]			
Clark 63	37.8	4.8	48
Cutler	40.7	2.2	39
Kent	39.1	3.0	37
Hill	38.1	4.8	36
York	41.2	3.2	34
Dare	42.0	4.2	41
Hood	41.9	4.0	36
Lee 68	41.9	4.0	39
Mean	40.4		
LSD (.05)	N.S.		
Double Cropped [2/]			
Clark 63	34.0	4.7	38
Cutler	38.5	4.0	37
Kent	37.1	3.7	35
Hill	42.3	5.0	47
York	42.8	4.3	39
Dare	40.3	4.2	38
Hood	39.3	4.3	38
Lee 68	36.1	5.0	49
Mean	38.8		
LSD (.05)	N.S.		

1/ Planted May 28 in 38-inch rows using conventional tillage methods.

2/ Planted June 30 following wheat, in 20-in. rows using a no-till planting system.

Table 10. Herbicide Test,[1] Henderson, Ky. 1970

Herbicide		Rate lbs Active	Percent Control				Yield
			6-19-70[2]		9-9-70[3]		
Trade Name	Common Name	Ingrd./Acre	Grass	Broadleaf	Grass	Broadleaf	Bu/Acre
Amiben + Lorox(Amilon)	amiben + linuron	3 + 1	98	93	100	98	44.4
Amiben + DNBP	amiben + dinoseb	2 + 4	93	78	100	95	52.0
Solo	naptalam + chlorpropham	2 + 2	83	65	98	68	44.9
Lasso	alachlor	2.5	95	83	100	88	48.0
Vernam	vernolate	2.5	93	70	100	65	43.9
Lasso + Lorox	alachlor + linuron	2.5 + .75	100	92	100	95	49.6
Treflan + Lorox	trifluralin + linuron	.75 + .75	100	95	100	95	49.4
Treflan + CIPC	trifluralin + chloropropham	.75 + 2	90	83	98	93	46.4
No treatment[4]		--	0	0	0	0	23.0

1/ Variety - Cutler.

2/ Visual evaluation prior to cultivation.

3/ Visual evaluation after cultivation.

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