KENTUCKY SOYBEAN PERFORMANCE TESTS – 1972

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Progress Report 204

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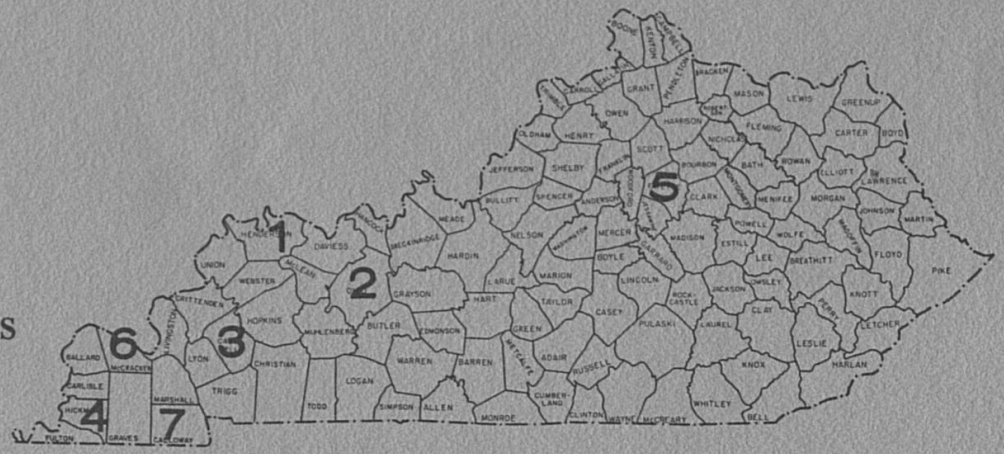
LOCATION OF THE 1972 SOYBEAN PERFORMANCE TESTS



Acknowledgment is made to the Owensboro Grain Company, Owensboro, and the Ellis Grain Company and Central Soya, 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	Patton silt loam	May 17	30 inches	Huston Ginger
2. Hartford	Zipp silt loam	May 12	30 inches	Dane Milligan
3. Princeton	Crider silt loam	May 18	30 inches	
4. Clinton	Loring silt loam	May 26	30 inches	Murrel Lock
5. Lexington	Maury silt loam	May 18	30 inches	
6. Paducah	Calloway silt loam	June 5	38 inches	Ricke Stone
7. Murray	Grenada silt loam	June 23	30 inches	Bun Hughes

(Extension and Experiment Station personnel who cooperated in the tests included Extension Agents Stuart Brabant, William Hendrick, Ted Howard, John Kavanaugh, George Martin, Charles Padgett, and Extension Specialists M. J. Bitzer, D. M. TeKrony, J. H. Herbek and A. S. Williams.)

Kentucky Soybean Performance Tests—1972

By D. B. Egli and Charles Tutt

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 in selecting 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 in 1972 were conducted at six locations in the major soybean-producing areas of the state and at Lexington. The testing locations, soil types, planting date and row width are shown on the opposite page. Each variety was planted in three plots (replications) at all locations, with individual plots being 4 rows wide and 20 feet long. Individual plots at the Hartford, Paducah, Murray and Lexington locations were 3 rows wide and 20 feet long. The seeding rate was approximately 10 viable seed per foot of row.

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% 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 that of 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 to select good seed of the best variety. The Kentucky Soybean Performance Tests are conducted to provide information useful in making this 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 at the bottom of the tables. 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 soybean varieties recommended by the Kentucky Agricultural Experiment Station for use in Kentucky are listed in Table 1. These varieties have been tested for a minimum of 3 years in Kentucky and have been shown to be superior in yield and other agronomic characteristics. Varieties 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 also lists the characteristics and disease reactions of the recommended varieties.

Variety Adaptation

Early-maturing varieties, such as Wayne, Calland and Clark 63 are best adapted in areas of Western Kentucky north of the Western Kentucky Parkway. Late-maturing varieties, such as Dare, York, and Hood, are best adapted in areas south of the West Kentucky Parkway. Mid-season varieties, such as Cutler, Cutler 71, Custer and Kent, can be successfully grown in most areas in Western Kentucky.

New Varieties

Several new varieties were included in the tests in 1972. Since these varieties were only recently released, seed supplies will be limited for several years.

Williams: Williams was developed at the University of Illinois and released July 20, 1971. Williams is of Group III

Table 1. Characteristics and disease reactions of the recommended varieties

Variety	Flower Color	Pubescence Color	Hilum Color	Maturity 1/	Maturity 2/	Seeds per pound	Disease Reaction 3/ Phytophthora Root Rot	Disease Reaction 3/ Cyst Nematode	Disease Reaction 3/ 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
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.

maturity, averaging a day later than Calland and 6 to 7 days earlier than Cutler 71. It is resistant to bacterial pustule, highly susceptible to downy mildew, and moderately susceptible to Phytophthora root-rot. Williams has white flowers and brown pubescence.

Bonus: Bonus was developed at Purdue University and released Aug. 1, 1971. Bonus is of Group IV maturity and matures approximately 7 days earlier than Kent and 2 days earlier than Cutler 71, is resistant to Phytophthora root-rot and has a slightly higher protein content than Cutler 71. Bonus has purple flowers and gray pubescence.

Essex: Essex was developed at the Virginia Agricultural Experiment Station and released on August 1, 1972. Essex matures approximately 3 to 5 days earlier than York and Dare. It is resistant to bacterial pustule, several races of downy-mildew, frogeye leafspot, moderately resistant to Phytophthora root-rot, and has good resistance to purple seed stain disease. Essex has purple flowers and gray pubescence.

Forrest: Forrest was developed by the USDA at Stoneville, Mississippi and released Sept. 15, 1972. It is similar to Dare in maturity and is resistant to races 1 and 3 of the soybean cyst nematode. Forrest is also resistant to the root-knot nematode and has moderate resistance to Phytophthora root-rot. It has white flowers and brown pubescence.

Several varieties developed by commercial companies and marketed in Kentucky were included in 1972 tests. The SRF varieties (SRF-307, SRF-400, and SRF-450) were developed by the Soybean Research Foundation, Mason City, Ill. The Seedmakers varieties (SM-1E, SM-2E, and SM-263G) were developed by Seedmakers, Inc., Princeton, Ill.

Soybean Cyst Nematode Tests

The tests located at Paducah and Murray (Table 7) were planted in areas known to be infested with the soybean cyst nematode. These tests included resistant and susceptible varieties. The soybean cyst nematode *(Heterodera glycines* Ichinoge) attacks soybean roots, reducing root growth and, thereby, reducing uptake of water and nutrients. Infected plants are yellow, stunted, and low in yield. If fields are known to be

infected with this pest, varieties resistant to the cyst nematode should be grown. The cyst nematode can be spread in soil from the infected area. Consequently, equipment and machinery should be carefully cleaned when moving from infected to non-infected fields.

The resistant varieties that are currently available are resistant only to Race 3 of the soybean cyst nematode. Race 4 of the nematode has been identified in Kentucky and, at the presnt time, the only available means of controlling this race of the nematode is by rotation of soybeans with non-susceptible crops, such as corn or sorghum.

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.

Table 2. Henderson, Kentucky

Variety	Yield (Bu/A) 1970-72	1971-72	1972	Lodging[1/]	Height(in.)[1/]
Wayne	49.3	50.3	55.6	3.0	43
SRF-307	--	47.6	55.0	3.5	49
Seedmakers 1-E	--	--	50.1	4.2	50
Seedmakers 2-E	--	--	48.9	4.3	44
Calland	52.7	52.6	57.3	2.3	49
Clark 63	46.9	45.1	44.9	3.3	50
SRF-400	--	47.8	54.9	4.0	54
Cutler 71	--	51.4	59.1	3.0	50
Seedmakers 263G	--	--	47.6	3.5	49
Kent	50.5	48.3	48.6	3.0	48
SRF-450	--	50.8	52.8	4.3	54
Columbus	--	44.1	44.9	4.2	49
Essex	--	--	58.8	3.2	39
Mack	--	45.3	51.9	4.0	47
Forrest	--	--	49.5	4.5	46
Dare	49.3	47.8	46.7	4.3	42
York	48.6	42.7	38.4	3.3	45
Mean	49.6	47.8	50.9		
LSD (.05)			12.0 Bu/A		

1/ 1972 data only.

Table 3. Hartford, Kentucky

Variety	Yield (Bu/A) 1970-72	1971-72	1972	Lodging[1/]	Height(in.)[1/]
SRF-307	--	--	28.6	2.5	31
Seedmakers 1-E	--	--	24.2	1.0	31
Seedmakers 2-E	--	--	26.5	1.3	27
Calland	36.6	30.6	25.6	1.0	30
Clark 63	36.3	32.3	29.9	1.0	33
SRF-400	--	34.0	33.4	1.8	36
Cutler 71	--	--	24.2	1.0	34
Seedmakers 263G	--	--	28.9	1.8	32
Kent	37.7	36.5	34.3	1.0	34
SRF-450	--	-	37.5	1.0	32
Columbus	--	35.9	28.7	2.8	36
Dare	41.7	41.3	43.3	2.0	30
York	40.2	40.6	40.6	2.5	33
Mean	38.5	35.9	31.2		
LSD (.05)			7.1 Bu/A		

1/ 1972 data only.

Table 4. Princeton, Kentucky

Variety	Yield (Bu/A) 1970-72	1971-72	1972	Maturity[1]	Lodging[1]	Height(in.)[1]
Wayne	47.8	49.3	50.2	9/8	1.3	38
Seedmakers 1-E	--	--	50.7	9/7	4.7	40
Seedmakers 2-E	--	--	50.1	9/11	2.3	37
Calland	--	54.7	55.1	9/12	1.7	44
Clark 63	50.2	51.0	52.3	9/18	1.7	43
SRF-400	--	49.2	52.8	9/18	1.3	43
Williams	--	--	57.5	9/14	1.0	41
Cutler	52.1	54.6	55.1	9/18	1.0	46
Cutler 71	--	54.2	53.6	9/18	2.0	47
Seedmakers 263G	--	--	54.6	9/18	1.3	42
Bonus	--	--	54.7	9/16	1.3	46
Kent	50.7	49.9	46.9	9/24	1.0	43
SRF-450	--	46.6	43.8	9/24	2.0	42
Columbus	--	45.5	49.2	9/27	1.0	50
Forrest	--	--	47.8	10/15	2.7	47
Dare	43.8	44.2	47.6	10/7	3.0	43
York	46.5	45.6	45.8	10/8	1.3	42
Hood	43.9	43.4	41.4	10/13	2.3	44
Mean	47.9	49.0	50.5			
LSD (.05)			6.5 Bu/A			

1/ 1972 data only.

Table 5. Clinton, Kentucky

Variety	Yield (Bu/A) 1970-72	1971-72	1972	Lodging[1]	Height(in.)[1]
Clark 63	36.8	36.3	50.1	2.7	41
Cutler 71	--	38.6	52.1[2]	2.5	42
Seedmakers 263G	--	--	46.6[2]	3.5	40
Kent	36.2	34.8	42.3	2.0	38
Columbus	--	38.2	47.8[2]	2.5	45
Essex	--	--	55.1	1.7	35
York	37.5	34.9	38.6	2.3	37
Pickett 71	--	35.1	42.6[2]	5.0	36
Mean	36.8	35.9	46.9		

1/ 1972 data only.

2/ Mean of only two replications.

Table 6. Lexington, Kentucky 1972

Variety	Yield (Bu/A)	Maturity	Lodging	Height(in.)
Wayne	37.1	9/20	1.5	37
SRF-307	48.6	9/20	2.3	40
Seedmakers 1-E	40.0	9/20	1.8	40
Seedmakers 2-E	41.5	9/20	2.2	39
Calland	52.8	9/20	1.2	42
Clark 63	37.3	9/25	2.3	42
SRF-400	40.2	10/5	3.0	44
Williams	47.2	9/25	1.2	40
Cutler	41.0	9/30	2.0	41
Cutler 71	39.2	9/20	2.2	44
Seedmakers 263G	41.0	9/30	2.2	40
Bonus	49.8	9/30	1.7	47
Kent	37.1	10/5	2.0	43
SRF-450	38.5	10/5	1.7	46
Columbus	35.1	10/5	2.8	47
Essex	51.8	1/	2.7	42
Dare	43.8	1/	3.8	46
Mean	42.5			
LSD (.05)	9.1 Bu/A			

1/ Frost occurred before plants matured.

Table 7. Soybean Cyst Nematode Studies, 1972

Variety	Nematode Reaction	Yield (Bu/Acre) Murray 3/	Paducah	Mean
Custer	Res 1/	23.8	17.7	20.8
Kent	Sus 2/	3.0	7.5	5.2
Mack	Res	20.3	23.1	21.7
Forrest	Res	20.7	20.5	20.6
York	Sus	8.9	9.3	9.1
Pickett 71	Res	27.4	24.9	26.2
Lee 68	Sus	13.3	11.6	12.4
Mean		16.8	16.4	16.6

1/ Varieties designated Res are resistant to Race 3 of the soybean cyst nematode. These varieties are not resistant to Race 4 of the nematode, which has been found in Kentucky. The only practical means of controlling Race 4 is through crop rotations.

2/ Susceptible to the soybean cyst nematode.

3/ Planted after wheat on June 23.

Table 8. USDA Regional Uniform Tests, 1971-72.

Variety	Yield (Bu/A) 1971-72	Yield (Bu/A) 1972	Maturity[1]	Lodging[1]	Height[1]
Maturity Group III, Henderson, Ky.[2]					
Wayne	46.9	49.4		2.7	48
Calland	49.0	50.0		2.8	52
Williams	53.7	56.9		3.3	49
Mean	49.9	52.1			
Maturity Group IV, Henderson, Ky.[2]					
Kent	44.2	38.3		3.3	50
Cutler 71	48.7	57.1		2.8	52
Bonus	48.4	50.0		2.0	53
Mean	47.1	48.5			
Maturity Group V, Princeton, Ky.					
Hill	43.0	40.7[3]	10/3	1.3	32
Essex	54.7	55.6	10/7	1.0	37
Mack	48.1	48.5	10/9	2.7	44
Dare	43.4	41.9[3]	10/11	2.0	39
Forrest	43.5	50.9	10/12	1.3	42
Mean	46.5	47.5			

1/ 1972 Data Only.

2/ Maturity Group III and Group IV are separate tests at the same location, and consequently, comparisons between tests are not valid.

3/ Yields averaged across only two replications.

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