Results of the KENTUCKY SOYBEAN VARIETY PERFORMANCE AND FERTILIZER TESTS 1955

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RESULTS OF THE KENTUCKY

SOYBEAN VARIETY PERFORMANCE AND FERTILIZER TESTS

1955

Recommended Varieties:

CLARK, WABASH, LINCOLN - Northern and eastern Kentucky
CLARK, PERRY, OGDEN - Southern and western Kentucky

Recommended Soil Treatment:

If quick tests indicate that the soil is moderately or strongly acid use ground limestone at rate of 2 or 3 tons per acre respectively; if low in available phosphorus use fertilizers to supply up to 80 pounds of P_2O_5 per acre; and if low in available potassium use fertilizers to supply up to 80 pounds of K_2O per acre. Apply limestone and fertilizers either before or after plowing. To avoid injury to seedling soybeans, do not drill fertilizer in contact with the seed. Soybeans respond well to the use of needed lime and fertilizers on other crops in the rotation ahead of the soybean crop.

The soybean variety tests reported herein were designed for the evaluation of varieties which are commonly grown or appear promising for use in Kentucky. The fertilizer test was designed to test the response of soybeans to the addition of lime, phosphorous, and potassium to the soil, either singly or in various combinations and according to the need as indicated by rapid chemical tests of the soil. The results of the uniform tests of experimental strains of soybeans conducted at Henderson and Lexington in cooperation with the U. S. Regional Soybean Laboratory, Urbana, Illinois, are reported in their Progress Report, RSLM 178, March, 1956.

The locations of the various tests are indicated in Fig. 1. The Henderson county and Hickman county tests were located in the main soybean-producing areas of the state on bottomlands of streams which are tributary to the Ohio and Mississippi Rivers respectively. The Fayette county test was located on upland soil of central Kentucky.

Methods Used

The variety tests were planted in 4-row plots with three replications and in a randomized block design. The rows were 19 feet long and 36 inches apart in the Fayette and Henderson County tests and 40 inches apart in the Hickman county test. A 16-foot section was harvested from each of the two center rows. Beans were planted at a rate of 12 seeds per foot of row. The

fertilizer test at Henderson was planted with Clark variety in the same manner as the variety test at that location except that rows were 40 feet long, and the treatments were in quadruplicate. Commercial inoculant was used on seeds at time of planting in all tests except that in Fayette county where inoculated beans had been grown on the land the preceding year. The attempt was made to follow best cultural practices at all locations.

Yields: Seed weights were recorded after the seed of all plots had reached a uniform moisture content.

Oil content: Percent of oil was determined from a composite sample of seed from all replications in each test. Analyses were made at the Experiment Station chemical laboratory. Percent oil is expressed on moisture-free basis.

Seed Size is reported as weight in grams per 100 seeds.

Lodging notes were recorded at or near maturity according to the scale shown in footnote to each table.

Height of plants was determined as the average length of plants in a plot from ground to the top extremity at time of maturity.

Maturity is taken as the date when the pods are dry and most of the leaves have dropped. It is expressed as days earlier (-) or later (+) than Perry as a reference variety.

Seed Quality is rated from 1 to 5 according to the scale shown as a footnote to each table.

Interpretation of Data

The difference in yield between varieties or soil treatments necessary for reasonable assurance that such an inherent yield potential exists, has been calculated and is given in a footnote to each table. Unless the yields of the two varieties or the two soil treatments being compared differ by as much as or more than the figures shown, little confidence can be placed in the apparent superiority of one variety or soil treatment over the other under the conditions of the particular test.

Data on agronomic characteristics other than yield have not been analyzed statistically; however, small differences between any two varieties or treatments are likely to be of little importance and should not be considered strongly indicative of a true difference.

Duration of Tests: The results of evaluating varieties or soil treatments over a period of several years are more trustworthy than those from a single year. A given variety may be outstanding in performance one year and show less desirable characteristics another year. Results over a period of years tend to average these fluctuations. Where available, yield data for more than a single year are given in the tables along with those of 1955.

TABLE 1 - Soybean Variety Test, Henderson County, 1955. Performance data and related information. Also 1954 yield data (from different locations) and average yields 1954 and 1955.

Co-operators: Ohio Valley Soybean Cooperative, Henderson; Owensboro Grain Co.; J.S. Priest and Herman Wood.

Location: 5 miles S. E. of Henderson, Ky. on Airline Highway; Farm: J. S. Priest; Herman Wood, operator.

Soil: Silt loam (Falaya local alluvium) on Elam Flat Creek Drainage Ditch - bottomland.

Soil Treatment: Limestone = 2 T/A and Fertilizer = 0-60-60 lb/A - Applied after plowing and disked in.

Date Planted: 5/25/55 Killing Frost: 11/1/55 Row Width: 36 inches.

Comment: Test was planted at optimum date. Soybeans came up a good stand and grew under nearly ideal conditions of weather and culture except that heavy rains shortly after blooming of earlier varieties caused flooding of lower parts of the tests with consequent severe lodging of plants.

Variety	Yield - 1955 1/ Bu/A	Rank	Maturity 2/	Lodging 3/	Ht, in	Seed Qual 4/	Gm /100 Beans	% Oil	Yield, Bu/A 1954	Ave. 1954-55
Hawkeye	--	-	---	-	--	-	--	----	37.8	----
Lincoln	31.7	7	-14	4	45	3	12	21.6	37.3	34.5
Clark	42.7	1	- 7	4	53	3	14	21.5	38.6	40.6
Wabash	32.8	5	- 6	2	47	3	12	22.4	34.8	33.8
Perry	36.6	2	10/4	3	45	3	14	21.6	31.5	34.0
Dorman	34.0	4	+ 6	4	56	3	10	21.9	31.8	32.9
Ogden	34.9	3	+ 32	3	59	3	16	19.3	21.8	28.3
Lee	31.5	6	+ 37	5	61	3	15	19.0	----	----
S-100	--	-	----	-	--	-	--	----	23.4	----

1/ Mean data of 3 replicates for yield and performance. Oil content from composite sample, 3 reps. 1955 yield differences of less than 5.3 bu/A not significant (Odds 19:1).

2/ Days earlier (-) or later (+) than Perry.

3/ Rating Scale for plant lodging: 1 = almost all plants erect; 2 = either all plants over slightly or a few down; 3 = all plants over moderately or 25% - 50% down; 4 = either all plants over considerably or 50% - 80% down; 5 = all plants down badly.

4/ Seed quality Rating Scale: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 2 - Soybean Variety Test - Hickman County, 1955 - Performance data and related information

Cooperator: J. T. Workman Location: R.1, Columbus, Ky. Soil: Silty clay loam (overflow bottom)

Soil Treatment: Fertilizer, 40-40-40 lb/A for preceding corn crop - none used directly.

Date Planted: 6-23-55 Killing frost: 11-1-55 Row width: 40 inches.

Comment: Soybeans in this test were planted about 1 month later than the optimum date, due to wet weather. Under conditions of late planting the late varieties are likely to produce higher yields than early or medium varieties.

Variety	Yield 1/ Bu/A	Rank	Maturity 2/	Lodging 3/	Height, Inches	Seed Quality 4/	Gm /100 Beans	% Oil
Lincoln	22.1	7	-2	1	35	3	12.8	22.0
Clark	25.4	4	-1	1	36	2.7	14.3	22.4
Wabash	24.7	5	-1	2	39	2.5	13.3	20.5
Perry	24.5	6	9/18	1	37	4	14.7	21.1
Dorman	30.0	3	+35	4	34	3	13.2	20.1
Ogden	31.9	2	+46	2	36	2.5	14.7	21.2
Lee	32.5	1	+50	4	36	2.5	12.5	21.9
Smith's Super	20.7	8	+46	4	53	5	16.3	18.5

1/ Yield and performance data are the mean of 3 replications. Oil content determined from composite sample of 3 replications. Yield differences of less than 5.3 bu/A are not significant.(Odds 19:1)

2/ Days earlier (-) or later (+) than Perry.

3/ Rating Scale of Plant Lodging: 1 = almost all plants erect; 2 = either all plants over slightly or a few down; 3 = either all plants over moderately or 25%-50% down; 4 = either all plants over considerably or 50% to 80% down; 5 = all plants down badly.

4/ Seed Quality Rating Scale: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 3 - Soybean Variety Test - Fayette County, 1955 - Performance data and related information. Also, 1954 yield data and 1954-55 average yields.

Location: Lexington, Ky. Farm: Experiment Station - Agronomy Farm. Fertility Level: Medium

Soil Type: Maury silt loam - Level. Soil Treatment: L - 1T/A fert.0-0-120 lb/A disked in after breaking.

Date Planted: 5-28-55 Killing Frost: 10-25-55 Row width: 36 inches.

Comment: Soybeans were planted near optimum date. Heavy rains falling immediately crusted the soil so badly that emergence of plants was delayed for a week or longer, and final stands were fair though variable excepting those for Dorman which were inadequate. Although favorable growth conditions prevailed until mid-August the dry weather and intermittent high temperatures for the rest of the growing season, resulted in small seed and many poorly filled pods. The 1954 crop had been similarly affected by late season drought.

Variety	1955 Yield 1/ Bu/A	Rank	Maturity 2/	Lodging 3/	Ht, in	Seed Qual. 4/	Gm /100 Seeds	% Oil	Yield. Bu/A 1954	Ave. 1954-55
Hawkeye	----	-	--	-	--	-	--	-----	21.8	----
Lincoln	20.1	3	-10	1	29	2	10	21.3	17.8	18.9
Clark	21.8	1	- 6	1	29	2.3	11.3	21.2	17.2	19.5
Wabash	19.6	4	- 4	1	29	1.5	11.8	21.0	19.3	19.4
Perry	20.8	2	10/3	1	32	2.3	12	19.9	20.8	20.4
Dorman	Poor Stand		--	-	--	-	--	-----	17.7	----
S-100	----	-	--	-	--	-	--	-----	18.5	----
Ogden	13.9	5	+	1	37	2	15.3	19.3	14.6	14.2

1/ Mean data of 3 replicates for yield and performance. Oil content from 3 replications Composite Sample. 1955 yield differences of less than 4.7 bu/A not significant. (Odds 19:1)

2/ Days earlier (-) or later (+) than Perry.

3/ Rating Scale of Plant Lodging: 1 = almost all plants erect.

4/ Seed Quality Rating Scale: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 4 - Soybean, Lime and Fertilizer Test - Henderson County, 1955. Performance data and related information.

Information regarding cooperators, location of test farm, soil description, dates of planting, killing frost and width of rows is the same as that shown in Table 1.

Soybean Variety used: Clark, Seed Innoculated.

Soil Test Results: Moderately acid (pH 5.8); P = low; K = very low.

Comment: Test was planted at optimum date. Soybeans came up a good stand and grew under nearly ideal conditions of weather and culture.

Treatment, Rate/A. 1/				Mean Yield 4 Reps, 2/	Date Mat-	Lodg-	Ht.	Seed Qual-	Weight
Lime-	Fertilizer/lb.			Bu/A	ure.	ing 3/	In	ity 4/	Gm /100
stone	N	P_2O_5	K_2O						Seed
0	0	0	0	34.6	9-27	1	46	2.6	13.5
2T	0	0	0	37.5	"	1	46	2.5	14.1
2T	0	80	0	36.6	"	1	46	2.5	14.3
2T	0	0	80	38.9	"	1	46	2.3	14.3
0	0	80	80	39.9	"	1	46	2.3	14.1
2T	0	80	80	44.2	"	1	46	2.3	14.2

1/ Limestone and fertilizers were applied broadcast on plowed ground and disked in. 400 pounds per acre of 0-20-20 fertilizer would supply the equivalent of 80 pounds P_2O_5 and 80 pounds of K_2O as used for last two treatments.

2/ Yield differences of less than 5.5 bu/A not significant. (Odds 19:1).

3/ Lodging Rating Scale, 1 = almost all plants erect; 5 = all plants down badly.

4/ Seed quality rating scale, 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

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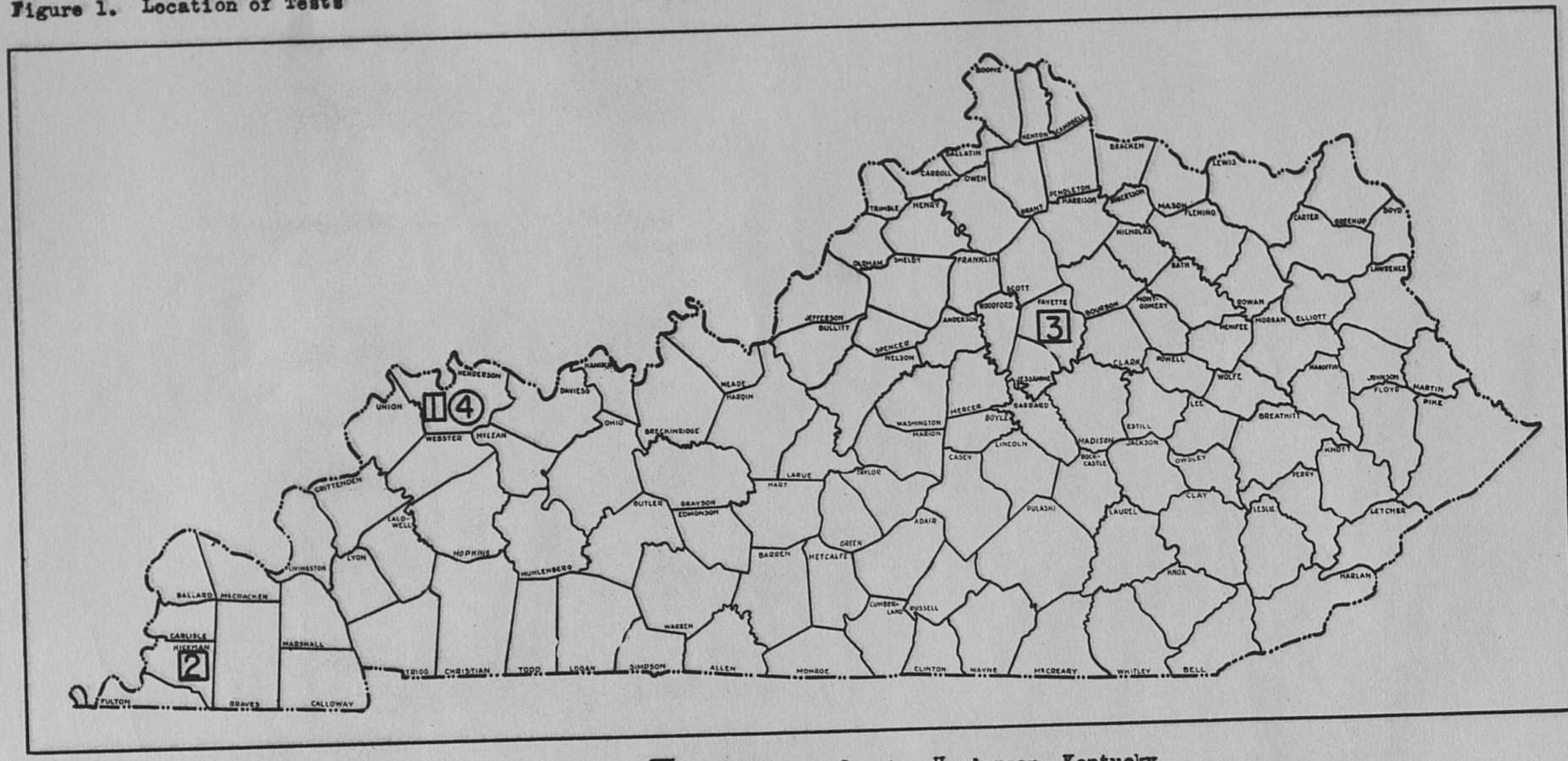
Figure 1. Location of Tests



Soybean Variety Test Locations:

1. Henderson County, Henderson, Kentucky
2. Hickman County, Columbus, Kentucky
3. Fayette County, Lexington, Kentucky

Soybean Fertilizer Test Location:

④ Henderson County, Henderson, Kentucky