Results of the KENTUCKY SOYBEAN VARIETY PERFORMANCE AND FERTILIZER TESTS 1956

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Progress Report 48

February 1957

Kentucky Agricultural Experiment Station
University of Kentucky
Lexington

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1956

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, phosphorus, 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 1956 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, will be reported in their Progress Report to be issued in 1957.

The location of the various tests is 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. 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 the fertilizer tests, but none was used for the variety tests 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. Then weights were calculated to bushels-per-acre basis.

Oil Content: Percent of oil was determined from a composite sample of seed from all replications in each test in 1955 and are shown with yield data for that year. 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. Yield data for more than a single year are given in the tables along with those of 1956.

TABLE 1–Soybean Variety Test, Henderson County, 1956–Performance data and related information. Also 1955 and 1954 yield data,(the latter from a different location) and average yields for 3 years.

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; He rman Wood, operator.
Soil: Silt loam (Falaya local alluvium) on Elam Flat Creek Drainage Ditch - bottomland.
Soil Treatment 1956: No treatment.
1955: Limestone-2 T/A and Fertilizer - 0-60-60 lb/A - Applied after plowing and disked in.
Date Planted: May 30, 1956 Killing Frost: November 9, 1956 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.

Variety	Yield-1956 [1] Bu/A	Rank	Maturity [2]	Lodging [3]	Ht. in.	Seed Qual. [4]	Gm/100 Beans	% Oil 1955 Test	Yield, Bu/A 1954	1955	Ave. 1954-55-56
Hawkeye	----	-	--	---	--	-	----	----	37.8	----	----
Lincoln	34.1	8	-6	1.7	38	3	14.5	21.6	37.3	31.7	34.4
Clark	47.8	1	+1	3	49	1.5	16.5	21.5	38.6	42.7	43.0
Wabash	38.0	4	+4	2	47	2	14.5	22.4	34.8	32.8	35.2
Perry	37.3	5	9/20	2	44	3	15.7	21.6	31.5	36.6	35.1
Dorman	35.2	7	+28	3	44	1	13.2	21.9	31.8	34.0	33.7
Ogden	36.8	6	+47	2.7	49	2	14.7	19.3	21.8	34.9	31.2
Lee	40.4	3	+48	4.7	44	2	12.3	19.0	----	31.5	----
D51-4888	41.6	2	+37	2.3	43	1	14.7	----	----	----	----
S-100	----	-	---	---	--	--	----	----	23.4	----	----

1/ Mean data of 3 replicates for yield and performance. Oil content in 1955 test was determined from composite sample of 3 replications. 1956 yield differences of less than 5.0 bu/A not significant. (Odds 19:1).
2/ Days earlier (-) or later (+) than Perry.
3/ Rating scale 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/ Rating Scale of seed quality: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 2 - Soybean Variety Test - Hickman County, 1956 -Performance data and related information. Also 1955 yield data and average yields 1955 and 1956.

Co-operator: J. T. Workman Location: R. 1, Columbus, Ky. Soil: Silty clay loam (overflow bottom)
Soil Treatment: Fertilizer, 8-32-32 lb/A for preceding corn crop - none used directly.
Date Planted: May 17, 1956 Killing Frost: Nov. 9, 1956 Row Width: 36 inches.

Comment: Soybeans in 1956 test were planted at about optimum date and in 1955 test 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. Good conditions of weather and culture prevailed in both growing seasons.

Variety	Yield-1956 1/ Bu/A	Rank	Maturity 2/	Lodging 3/	Ht. in.	Seed Qual. 4/	Gm/100 Beans	% oil 1955 Test	Yield, Bu/A 1955	Ave. 1955-56
Lincoln	27.6	9	-12	1.5	38	3	11.7	22.0	22.1	24.8
Clark	41.7	2	- 5	1	37	3	13.3	22.4	25.4	33.5
Wabash	38.0	8	0	3.7	40	3	14	20.5	24.7	31.3
Perry	39.2	7	9/17	1	35	5	14	21.1	24.5	31.8
Dorman	41.8	1	+ 8	3.7	40	2	12	20.1	30.0	35.9
Ogden	39.4	6	+29	2.2	43	4	14	21.2	31.9	35.6
Lee	39.7	5	+38	3	41	3	11	21.9	32.5	36.1
C 1069	41.0	3	+10	2	44	3	15	----	----	----
D51-4888	40.5	4	+29	1.2	41	2	13.7	----	-----	----

1/ Yield and performance data are the mean of 3 replications. Oil content in 1955 test was determined from composite sample of 3 replications. 1956 Yield differences of less than 5.7 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/ Rating Scale Seed Quality: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 3 - Soybean Variety Test - Fayette County, 1956 - Performance data and related information. Also, 1955 and 1954 yield data and 1954-56 average yields.

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

Soil Type: Maury silt loam-level. Soil Treatment 1955: Fert. 36-60-60 lb/A disked in after breaking. 1956: L = 2T/A; Fert. 0-0-100 lb/A disked in after breaking.

Date Planted: June 5, 1956 Killing Frost: November 8, 1956, Row Width: 36 inches.

Comment: The 1956 test was planted near optimum date. Soybeans came up a good stand and grew under nearly ideal conditions of weather and culture. In 1955 and 1954 favorable growth conditions prevailed until mid-August, but the dry weather and intermittent high temperatures for the rest of the growing season, resulted in small seed and many poorly filled pods.

Variety	Yield-1956 [1] Bu/A	Rank	Maturity [2]	Lodging [3]	Ht. in.	Seed Qual [4]	Gm/100 Beans	% Oil 1955 Test	Yield, Bu/A 1954	1955	Ave. 1954-55-56
Hawkeye	----	-	---	---	--	-	----	----	21.8	----	----
Lincoln	35.8	2	-15	2	40	1	12.7	21.3	17.8	20.1	24.6
Clark	36.6	1	-11	2	37	1	12.7	21.2	17.2	21.8	25.2
Wabash	30.4	5	- 5	3.3	43	1.7	12.7	21.0	19.3	19.6	23.1
Perry	33.2	3	10/6	2	43	1	13.7	19.9	20.8	20.8	24.9
Ogden	24.1	6	+29	3.1	49	1.7	13.0	19.3	14.6	13.9	17.5
D51-4888	30.8	4	+30	2.3	40	1.7	11.7	----	----	----	----
Lee	22.5	7	+27	3.7	41	2.3	11.2	----	----	----	----
Dorman	----	-	---	---	--	-	----	----	17.7	----	----
S-100	----	-	---	---	--	-	----	----	18.5	----	----

1/ Mean data of 3 replicates for yield and performance. Oil content from 3 replications Composite Sample. 1956 yield differences of less than 3.4 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; 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/ Rating Scale: 1 = very good; 2 = good; 3 = fair; 4 = poor; 5 = very poor.

TABLE 4 - Effect on yield of Soybeans in 1955 and 1956 of Limestone and fertilizers used for the 1955 crop.

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 Inoculated both years.

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

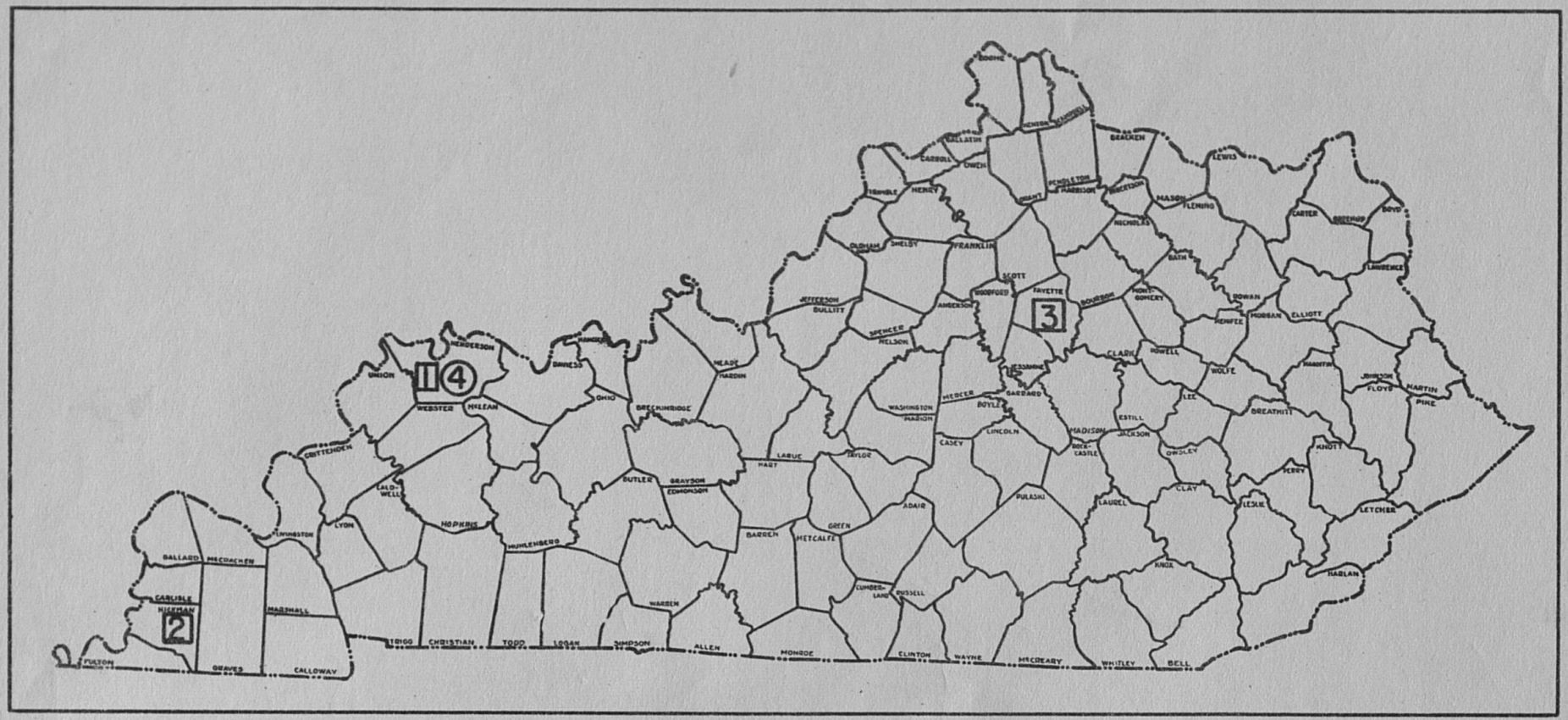
Comment: Test was planted at optimum date and soybeans came came up a good stand and grew under nearly ideal conditions of weather and culture during both years.

Treatment, Rate /Acre 1/				Mean Yield 4 Reps. Bu/A 2/	
Lime-stone	Fertilizer -- lb. N	P_2O_5	K_2O	1955	1956
0	0	0	0	34.6	31.1
2T	0	0	0	37.5	27.6
2T	0	80	0	36.6	32.8
2T	0	0	80	38.9	30.4
0	0	80	80	39.9	29.9
2T	0	80	80	44.2	34.8

1/ In 1955 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. In 1956 no additional treatment was made.

2/ Yield differences of less than 5.5 bu. per acre in 1955 not significant. (Odds 19:1). Yield differences of less than 5.3 bu. per acre in 1956 not significant. (Odds 19:1).

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