

RESULTS OF THE KENTUCKY CORN PERFORMANCE TESTS IN 1952

The tests were designed primarily for the evaluation of experimental hybrids developed by the Kentucky Agricultural Experiment Station in its breeding program. Also included are experimental and commercially available hybrids developed by other state and federal agencies, several privately controlled hybrids, and hybrids currently recommended for certification in Kentucky.

This planting arrangement provides a basis for adequate comparison between experimental and commercial hybrids, as well as for comparisons within each classification.

The location of the various performance trials is shown in Figure 1. Yields in the Madison county test averaged 71.4 bushels per acre, but excessive non-uniformity of the test plots made it necessary to discard the data.

The corn hybrid performance data in this report contain only those which apply to 35 hybrids harvested from at least five of the seven usable test locations in Kentucky. These consist of 12 which are commercially available and 23 promising experimentals.

Data on several other hybrids and open-pollinated varieties were secured in individual locations; however, they are not strictly comparable on a state-wide basis, and hence are not included in this summarized report.

Experimental Procedure

The entries in each test were compared on their performance in 2 x 10 hill plots, except at Princeton where 2 x 15 hill plots were used. All plantings were arranged in a randomized complete block design. Five replications were used at six locations; space limitations allowed only 4 replications at the Jefferson county and Princeton Substation trials. Seed of privately controlled commercial hybrids was purchased on the open market, while seed of state or federally controlled hybrids was obtained from the respective experiment stations or from growers of certified seed.

Cultural practices commonly followed in each location determined the spacing of hills and the number of plants per hill. Such data along with fertilizer treatment and date of planting and harvesting are given in Table 1. The conditions within each trial area were maintained as uniformly as possible.

Measures of Performance

1. Yields are recorded as bushels per acre of shelled corn with 15.5 percent moisture. In all tests correction was made for missing hills, but not for minor variations in stand.

2. Moisture at harvest. The percentage of moisture in the corn at harvest was obtained by sampling 15 to 20 ears from each of two or more replications. The average of the moisture determinations for each hybrid was used in calculating its yield.

3. Broken stalks. The percentages of broken stalks were determined by making a count of the plants broken below the ear-bearing node. Actual plant counts of plants erect at harvest were made in the test at Quicksand while in other locations they were recorded as the difference between 100 percent and the sum of the root-lodged and/or broken. Root-lodging was negligible in all locations except Lexington and Lee county; therefore, the sum of the plants lodged, broken, and erect will not necessarily equal 100 percent.

4. Dead stalks were determined by examining the base of the stalk just above the crown. Structural weakness in the internodes just above the crown is indicative of premature killing of plant tissues due to the action of stalk rotting organisms.

5. Ear height was measured, as it is found to be important in relation to stalk breakage. Lower-eared hybrids are generally less susceptible to breakage, and more desirable for mechanical harvesting.

Interpretation of Data

The difference necessary to reasonably insure that inherent yield potential exists between varieties has been calculated and is given at the foot of each table as the L. S. D. (least significant difference). Unless the yields of the two hybrids being compared differ by as much as or more than this L. S. D., little confidence can be placed in the superiority of one hybrid over the other under the conditions of the particular test.

Data on agronomic characteristics other than yield have not been subjected to statistical analysis; however, small differences between any two hybrids are likely of little importance and should not be considered strongly indicative of a true difference.

1952 Results. Yield data for the individual locations and the average for all locations are given in Table 2. Some hybrids were not included in all locations. "Comparable averages", given in the last column, adjust the yields according to the average yields of the hybrids in the different locations and give a truer picture as to what the hybrids would have yielded had they been included in all locations. Moisture, root-lodged plants, broken stalks, erect plants, dead stalks, ears per plant, and ear height are given in Table 3 as an average of the locations in which the data were obtained.

There was some variation in rank among hybrids in the individual locations, but in general, the hybrids ranking high for all locations were high in the individual locations. Twenty experimental hybrids from the Kentucky Agricultural Experiment Station were entered for more advanced testing. They are not available commercially and may, or may not, be given a name and released as new hybrids.

Period of Years Results. Evaluation of hybrids for yield and standing ability for a period of years is more valuable than the results from a single year. Hybrids may be outstanding one year and undesirable another year. Results over a period of years tend to average these fluctuations. The recommendation of an experimental hybrid for certification and commercial production is dependent upon its continued excellence in several tests and seasons.

Data on hybrids which have been tested in all locations for two or more years are presented in Table 4. US 523W continued to out-perform the older recommended hybrids.

Table 1. Cooperators, Location, Soil Type, Previous Cropping, Fertilizer Applied, Plant Spacing, and Dates of Planting and Harvesting for the Yield Tests in the Eight Locations in Kentucky, 1952.

Cooperators	Location	County	Soil Type	Previous Crop	Fertilizer Applied	Plants		Date Planted	Date Harvested
						Hill Spacing	Hill per Hill		
1. Kentucky Agr'l. Exp. Station	Lexington	Fayette	Maury silt loam	Red Clover	24 lbs. N 32 lbs. P ₂ O ₅ 92 lbs. K ₂ O	36" x 42"	3	May 2	Sep. 23-25
2. Pennyrite Grain Improvement Assoc.	Hopkinsville	Christian	Silt loam	Lespedeza and Weeds	500 lbs. 4-12-8	42" x 42"	3	April 28	Sep. 29
3. Western Ky. Exp. Substation S. J. Lowry, L. M. Caldwell & Leo A. Link	Princeton	Caldwell	Silt to clay loam-lime-stone origin	Tobacco	8 ton manure	42" x 42"	2	April 30	Sep. 6 1/2
4. Bryant Chrisler	Owensboro	Daviess	Sandy loam	Pasture 7 years	200 lbs. 12-12-12	38" x 38"	3	June 4	Oct. 7
5. R. Willis Stout	Jeffersonton	Jefferson	Silty clay loam	Alfalfa and grass-4 yrs.	12 ton manure 400 lbs. 0-20-20 200 lbs. ammonium nitrate, 360 lbs. 3-12-12	33" x 46"	3	May 17	Oct. 15
6. Robinson Exp. Substation Roger Jones	Quicksand	Breathitt	Sandy loam	Corn and Cover crop	200 lbs. potash and manure	36" x 36"	2	May 7	Nov. 25-27
7. Will Taylor	Beattyville	Lee	Silt loam	Corn	None	38" x 38"	3	May 6	Oct. 22
8. Berea College C. O. Spillman	Berea	Madison	Silt loam	Corn	720 lbs. 20% superphosphate, 6 ton manure	36" x 32"	2	May 5	Oct. 11

1/ Cut and shocked.

Table 2. Average Acre Yields of Commercial and Experimental Hybrids at Seven Locations in Kentucky, 1952.

Rank in Yield	Hybrid number	Lexington Hopkinsville Quicksand Princeton Owensboro Jeffers town Lee Co. Average							Comparable Average
		bu.	bu.	bu.	bu.	bu.	bu.	bu.	
1	Ky 0228 (Exp) (Y)	103.5	55.8	89.3	39.1	64.8	67.7	44.7	66.4
2	Ky 0108 (Exp) (W)	90.8	54.8	84.2	41.9	53.2	76.6	52.9	64.9
3	Ky 2105 (Exp) (W)	97.5	46.1	81.3	40.4	54.9	86.7	44.5	64.5
3	Ky 2106 (Exp) (W)	99.3	45.0	84.7	45.1	61.7	75.6	40.0	64.5
5	Ky 0109 (Exp) (W)	88.3	55.5	72.4	45.7	51.8	87.5	46.7	64.0
6	Stull 400W (W)	100.5	47.6	74.7	38.9	56.7	81.4	45.1	63.6
7	US 523W (W)	99.9	48.3	76.4	44.5	63.7	65.2	44.6	63.2
8	Ky 1002 (Exp) (Y)	87.7	54.6	74.2	39.7	57.0	85.1	41.5	62.8
9	CB 8911W (Exp) (W)	89.8	48.0	89.6	41.9	48.0	76.5	43.1	62.4
10	Ky 1102A (Exp) (W)	82.8	59.2	81.6	-	39.9	-	56.5	62.0
11	Ky 405B (W)	88.7	45.7	81.8	42.1	52.1	77.6	45.1	61.9
12	Ky 0103 (Exp) (W)	91.5	49.1	77.1	43.1	45.9	82.9	41.9	61.6
13	Ky 0110 (Exp) (W)	86.3	45.9	82.1	42.1	47.6	74.3	47.0	60.8
14	Ky 1008 (Exp) (Y)	90.3	-	78.9	39.3	48.8	69.2	49.7	60.6
15	Ky 1005 (Exp) (Y)	87.4	52.8	77.0	35.7	52.8	59.9	52.1	59.7
16	Ky 9105B (Exp) (W)	81.1	44.7	86.7	42.2	54.8	65.6	41.8	59.6
17	Funk G 512W (W)	91.1	42.4	79.2	37.4	51.1	71.6	44.0	59.5
17	Ky 103 (Y)	90.4	51.2	65.3	37.6	53.0	76.2	43.1	59.5
19	Ky 0105 (Exp) (W)	86.5	51.7	86.1	38.4	42.1	57.9	49.2	58.8
20	Ky 1029 (Exp) (Y)	92.6	47.8	72.5	32.7	48.0	73.8	-	58.6
21	US 13 (Y)	95.0	50.6	60.6	39.2	47.0	72.0	43.5	58.3
22	Funk G 91 (Y)	96.0	49.1	69.9	-	42.3	62.3	42.4	58.0
23	Ky 1110 (Exp) (W)	96.3	49.3	69.9	41.4	42.7	62.3	42.3	57.7
23	Ind 750B (W)	87.2	42.6	70.8	38.4	53.0	65.6	46.3	57.7
25	Broadbent 235W (W)	85.7	51.5	69.1	41.7	43.9	68.8	42.5	57.6
26	Ky 7114B (Exp) (W)	85.5	47.0	76.2	38.6	55.1	59.9	37.3	57.1
27	Ky 9005 (Exp) (Y)	83.6	42.9	63.1	40.1	46.2	78.9	39.9	56.4
28	Ky 1112 (Exp) (W)	78.0	47.8	74.3	41.4	46.0	55.9	49.1	56.1
28	CB 7616 (Exp) (Y)	81.2	41.7	87.7	39.8	47.8	53.9	-	56.1
30	Ky 203 (W)	81.0	45.6	75.0	44.9	47.3	56.5	42.0	56.0
31	Ky 9006 (Exp) (Y)	93.3	-	69.9	41.4	36.5	54.6	43.5	54.6
32	Ky 0206 (Exp) (Y)	82.6	39.7	66.9	34.8	53.0	63.7	34.2	53.6
33	Mo 804 (Y)	79.8	43.3	70.6	38.9	43.5	55.3	38.9	52.9
34	Ky 102 (Y)	82.5	39.8	69.5	33.5	45.9	55.1	39.1	52.2
35	CB 7675 (Exp) (Y)	73.2	38.6	76.7	35.2	37.4	49.7	39.6	50.1
Means		88.8	47.7	76.2	39.9	49.6	68.6	44.1	59.2
L. S. D.		13.2	8.6	12.9	5.3	11.3	15.2	7.9	

(Y) Yellow hybrid, (W) White hybrid, (Exp) Experimental hybrid - not available, commercial hybrid

Table 3. Summary of Performance Data of Hybrid Test in Kentucky, 1992

Rank in Yield	Hybrid number	Acre Yield 7 tests	Moisture		Root lodged plants 2 tests	Total		Erect plants 6 tests	Dead stalks 2 tests	Ear	
			bu. 7 tests	at 7 tests		stalks broken 6 tests	plants 6 tests			per plant 6 tests	Ear height 2 tests inch.
1	Ky 0228 (Exp)	66.4	19.2	10.2	10.8	85.8	4.2	0.95	53		
2	Ky 0108 (Exp)	64.9	18.4	1.2	4.6	94.8	12.6	0.96	52		
3	Ky 2105 (Exp)	64.5	16.1	0	5.9	94.1	10.4	0.96	47		
3	Ky 2106 (Exp)	64.5	16.2	3.0	4.3	94.7	5.9	0.91	46		
5	Ky 0109 (Exp)	64.0	17.7	3.4	3.6	95.2	9.6	0.95	44		
6	Stull 400W	63.6	17.4	1.8	6.6	92.8	6.8	0.94	50		
7	US 523W	63.2	18.1	5.9	6.6	91.4	6.4	0.90	48		
8	Ky 1002 (Exp)	62.8	15.9	1.7	3.8	95.6	7.8	0.98	48		
9	CB 8911W (Exp)	62.4	19.1	4.2	3.2	95.4	3.4	0.89	55		
10	Ky 1102A (Exp)	62.0	18.8	0	2.3	97.7	4.6	0.87	46		
11	Ky 405B	61.9	18.0	1.7	5.2	94.2	12.2	0.96	48		
12	Ky 0103 (Exp)	61.6	17.9	3.8	5.6	92.0	8.4	0.90	50		
13	Ky 0110 (Exp)	60.8	17.5	0.4	4.4	95.5	5.6	0.92	50		
14	Ky 1008 (Exp)	60.6	19.8	2.0	4.2	95.0	11.0	1.00	51		
15	Ky 1005 (Exp)	59.7	17.4	0	3.9	96.1	1.2	0.89	48		
16	Ky 9105B (Exp)	59.6	19.3	0	3.6	96.4	2.6	0.90	52		
17	Funk G 512W	59.5	16.9	0	4.8	95.2	7.8	0.86	50		
17	Ky 103	59.5	15.6	0.9	6.4	93.3	8.9	0.95	48		
19	Ky 0105 (Exp)	58.8	17.8	0	4.3	95.7	8.5	0.84	50		
20	Ky 1029 (Exp)	58.6	19.0	0.5	6.2	93.6	5.6	0.89	48		
21	US 13	58.3	15.3	0	4.2	95.8	10.6	0.94	48		
22	Funk G 91	58.0	16.3	0	1.9	98.1	10.4	0.90	46		
23	Ky 1110 (Exp)	57.7	18.3	0	2.7	97.3	5.4	0.86	42		
23	Ind 750B	57.7	17.2	3.1	2.6	96.4	9.0	0.90	47		
25	Broadbent 235W	57.6	17.9	2.2	4.4	94.9	10.2	0.89	46		
26	Ky 7114B (Exp)	57.1	18.4	0	4.1	95.9	6.8	0.86	49		
27	Ky 9005 (Exp)	56.4	16.1	0.4	2.9	97.0	8.6	0.96	46		
28	Ky 1112 (Exp)	56.1	19.9	0	1.7	98.3	3.4	0.87	48		
28	CB 7616 (Exp)	56.1	18.6	1.2	4.2	95.3	6.4	0.89	53		
30	Ky 203	56.0	17.4	0	6.1	93.9	9.6	0.83	52		
31	Ky 9006 (Exp)	54.6	16.0	0	2.5	97.5	7.6	0.86	48		
32	Ky 0206 (Exp)	53.6	18.8	1.2	5.0	94.6	9.4	0.88	50		
33	Mo 804	52.9	17.3	0	5.0	95.8	7.7	0.88	51		
34	Ky 102	52.2	17.5	0	10.2	89.8	21.0	0.92	54		
35	CB 7675 (Exp)	50.1	18.8	3.5	4.3	94.6	6.5	0.79	50		
Means		59.2	17.7	1.5	4.6	94.8	7.9	0.90	49		

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