

RESULTS OF THE KENTUCKY CORN PERFORMANCE TESTS IN 1953

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

This planting arrangement provides a basis for adequate comparison between experimental and commercial hybrids, as well as for comparison within each classification. The nine test areas were chosen to sample the varying soil types, climates, and other conditions under which corn is grown in Kentucky. The locations of the various performance trials are indicated in Figure 1.

Yield data for 44 hybrids that were entered in tests at eight locations are given in Table 2. Also included in Table 2 are yield data for nine hybrids and three open-pollinated varieties which were included in individual locations.

Data on moisture, standing ability, dead stalks, and ear height are given in Table 3 for the 44 hybrids entered at eight locations.

A test consisting of five experimental hybrids and twelve commercially available hybrids was completed in Kenton County. Performance data for the hybrids in this test are given in Table 5.

Experimental Procedure

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.

The entries in each test were compared on their performance in 2 x 10 hill plots. The test in Kenton County was arranged in a randomized complete block design with five replications. At Princeton the test was arranged in a quadruple lattice design. All other tests were arranged in a 7 x 7 balanced lattice square design with four replications. 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.

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1. Yields are recorded as bushels per acre of shelled corn with 15.5 percent moisture. Correction was made for missing hills, but not for minor variations in stand, in all tests except the one in Madison County, which is reported on an actual yield basis.

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. Stalks broken because of corn borer damage were determined by examining the stalk at the point of the break for corn borer punctures or the presence of frass. 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 slight in all tests except those at Lexington and Jeffersontown. The data in Table 3 are averages of only those two tests. Thus the sum of 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.

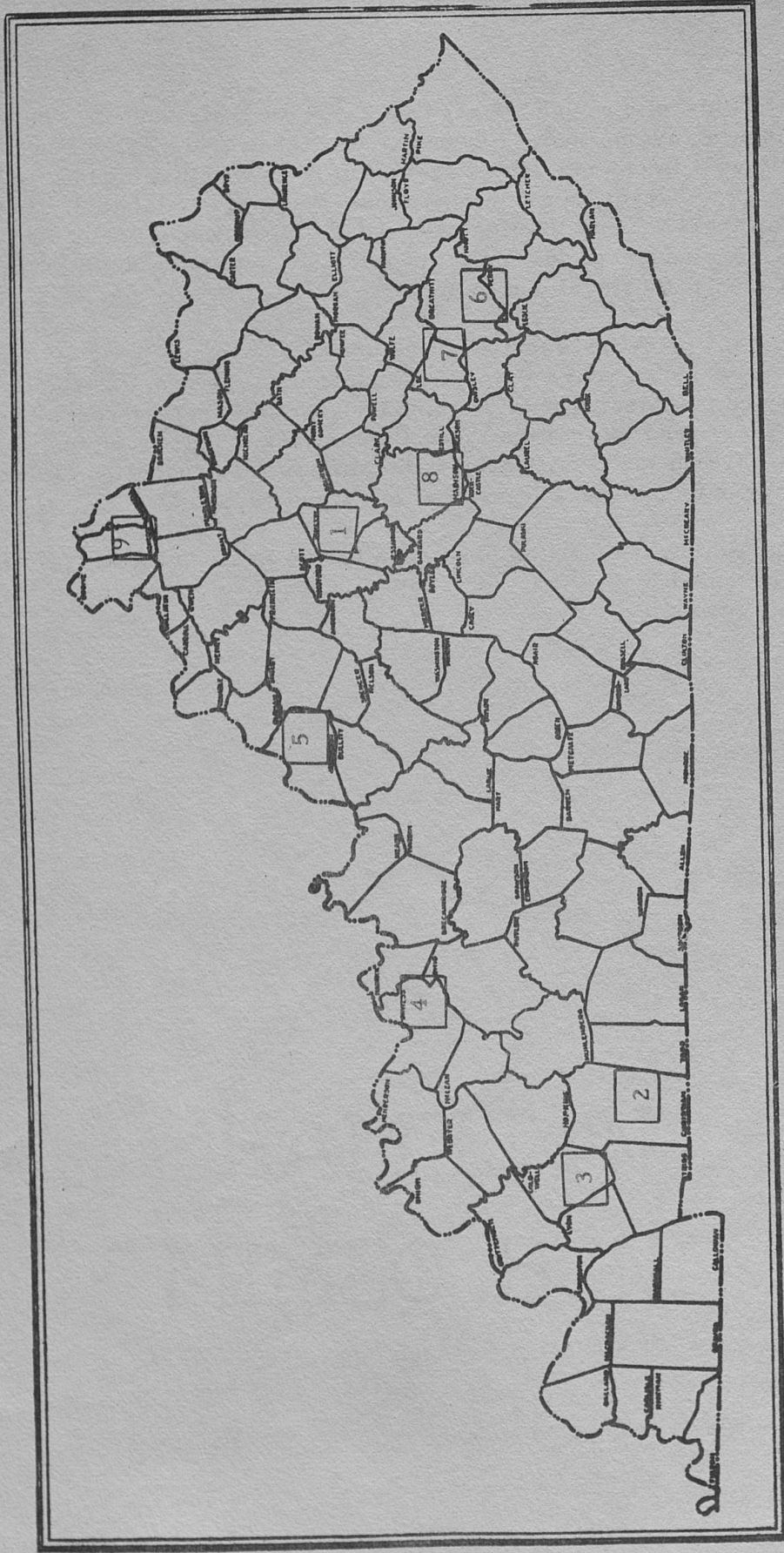
1953 Results. Yield data for the individual locations and the average for all locations are given in Table 2. Moisture, root-lodged plants, broken stalks, erect plants, dead stalks, and ear height are given in Table 3 as an average of the locations in which the data were obtained. Data for the Kenton County tests are given in Table 5.

Hybrids with a high average yield for all tests tended to be among the high-yielding group in any one test. However, several hybrids were found to perform exceptionally well in one particular test or in tests within a certain region of the state, while their performance in other tests was not outstanding. Thirty-one experimental hybrids from the Kentucky Agricultural Experiment Station were entered for more advanced testing. They are not available commercially, but may be released if they continue to perform well.

Period of Years Results. Evaluation of hybrids for yield and standing ability over 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.

Figure 1. Location of Corn Performance Trials



- | | |
|-----------------------------------|-------------------------------------|
| 1. Lexington, Fayette County | 5. Jeffersonstown, Jefferson County |
| 2. Hopkinsville, Christian County | 6. Quicksand, Breathitt County |
| 3. Princeton, Caldwell County | 7. Beattyville, Lee County |
| 4. Owensboro, Daviess County | 8. Berea, Madison County |
| | 9. Morning View, Kenton County |

Table 1. Cooperators, Location Soil Type, Previous Cropping, Fertilizer Applied, Plant Spacing, and Dates of Planting and Harvesting for the Yield Tests in the Nine Locations in Kentucky, 1953.

Cooperators	Soil Type	Previous Crop	Fertilizer Applied	Hill Spacing	Plant		
					per Hill	Date Harvested	
1. Agr'l. Exp. Station, Lexington	Maury silt loam	Red clover	6 tons manure per acre.	36" x 42"	3	May 22	Oct. 9-13
2. Pennyrile Grain Imp. Assoc., Hopkinsville	Silt loam	Lespedeza and weeds.	600 lbs. 8-8-8	42" x 42"	3	May 25	Oct. 6
3. Western Ky. Substation Princeton	Silt to clay loam-lime-stone origin	Tobacco	8 tons manure per acre	42" x 42"	2	May 23	Sept. 23
4. Robert Reid, Owensboro	Sandy loam	Wheat followed by lespedeza	300 lbs. 6-8-6 at the row. 100 lbs. Am. N. sidedressing	40" x 40"	3	May 27	Oct. 24-25
5. R. Willis Stout, Jeffersonton	Overflow Bottomland	Sweet Clover and weeds	250 lbs. Am. N. plowed under 300 lbs. 3-18-9 Min. in row at seeding	30" x 46"	3	June 13	Nov. 2
6. Robinson Substation, Quicksand	Sandy loam	Corn	Heavy crop of wheat in dough stage and barnyard manure	36" x 36"	2	May 26-28	Oct. 16-17
7. Mr. Moore, Beattyville	Silt Loam	Alfalfa & cultivated crop	None	42" x 42"	3	June 2	Oct. 23
8. Berea College, Berea C. O. Spillman & C. M. Wade	Silt Loam	--	--	24" x 36"	2	May 14	Sept. 30
9. Wilmer Steinhauser, Morning View	Clay loam	Tobacco	Manure	42" x 42"	3	May 27	Oct. 17

Table 2. Average Acre Yields of Commercial and Experimental Hybrids at Eight Locations in Kentucky, 1953

Rank in Yield	Hybrid Number	Lexington	Hopkinsville	Princeton	Owensboro	Jeffersonton	Quicksand	Lee Co.	Berea	Ave.
1	Ky 0228	52.1	62.1	85.4	54.7	98.5	77.2	56.0	89.5	71.9
2	Ky 0110	52.4	56.0	70.6	52.2	86.8	91.0	74.9	89.2	71.6
3	Ky 2018	52.5	62.4	75.8	57.8	92.0	90.7	51.5	84.4	70.9
4	Ky 2026	47.5	59.9	76.2	56.3	84.2	85.7	66.1	87.5	70.4
5	Ky 1005	50.0	61.8	72.6	47.8	94.3	83.8	64.8	86.6	70.2
6	Ky 1023	48.9	58.9	75.2	52.0	96.7	81.4	61.6	86.2	70.1
7	Ky 2106	54.0	62.9	72.2	44.1	85.6	80.7	70.6	89.9	70.0
8	Ky 2030	43.8	62.7	70.8	49.1	88.2	85.9	65.0	92.9	69.8
9	Ky 0109	57.0	65.1	72.9	56.1	82.4	83.4	56.0	84.9	69.7
10	Ky 2105	59.5	60.6	64.8	51.6	92.8	76.4	65.7	82.5	69.2
11	Ky 1110	47.9	70.4	76.6	49.7	85.8	83.4	64.6	73.1	68.9
11	Funk's G91	54.9	67.2	62.8	61.1	87.4	78.8	64.5	74.4	68.9
11	Ky 2001	56.4	62.2	68.2	56.8	92.0	74.6	63.5	77.8	68.9
14	Ky 103	59.5	61.7	70.9	52.6	78.2	77.5	59.6	88.8	68.6
15	Ky 7114B	47.0	59.8	75.2	49.6	76.9	91.4	63.1	81.8	68.1
15	Ky 0216	59.0	67.8	74.1	54.2	90.0	71.0	49.4	79.2	68.1
17	Ky 0105	54.5	58.7	74.0	47.2	86.0	84.0	54.8	84.8	68.0
18	CB 8911W	47.6	59.0	74.8	42.8	82.9	81.5	56.2	97.8	67.8
18	Ky 0217	58.7	60.8	72.8	59.0	82.1	77.7	54.6	76.6	67.8
20	Ky 2111	59.3	63.5	71.8	54.2	99.3	79.0	54.8	59.5	67.7
20	US 13	54.5	57.9	71.9	54.7	78.5	74.5	60.3	89.6	67.7
20	Ky 1002	59.1	59.9	73.4	53.1	77.1	76.6	65.0	77.6	67.7
23	Funk's G512W	56.4	57.3	74.1	43.3	80.7	84.0	57.1	85.8	67.3
23	Ky 2109	61.8	61.1	69.2	52.2	84.5	73.4	63.3	72.6	67.3
23	Ky 1008	50.2	53.8	78.0	50.7	76.7	83.4	65.2	80.3	67.3
26	Ky 1102A	51.3	60.5	74.8	42.1	78.0	83.2	65.3	82.2	67.2
27	Ky 9105B	50.5	60.8	71.1	41.7	80.4	84.0	65.7	78.2	66.6
28	Ky 9107	46.6	56.8	80.0	36.5	70.8	78.7	62.6	97.3	66.2
29	US 523W	50.5	61.9	69.5	47.5	65.8	82.8	58.3	87.6	65.5
30	Ky 2108	56.4	59.4	69.0	44.5	68.3	76.5	60.6	87.2	65.2
31	CB 8902	52.4	48.5	70.8	48.8	74.5	78.2	69.3	77.1	65.0
32	Funk's G134	51.7	60.9	69.7	51.0	79.8	72.1	65.3	67.5	64.8
33	Ky 2004	52.2	59.0	84.9	47.9	83.9	82.1	55.2	74.6	64.7
34	Ky 0108	45.9	59.1	71.2	60.0	75.2	77.5	58.2	70.0	64.6
35	Ky 2107	54.8	61.7	67.4	51.6	85.0	79.5	50.7	64.9	64.5

Table 2. Cont.

Rank in Yield		Lexington	Hopkinsville	Princeton	Owensboro	Jeffersonton	Quicksand	Lee Co.	Berea	Ave.	
36	Ind 750B	(W)	52.0	57.3	73.0	56.1	74.0	79.4	56.2	67.2	64.4
38	Stull 400W	(W)	53.0	57.9	68.0	42.5	76.2	76.6	54.1	79.2	63.4
39	Ky 102	(Y)	54.2	48.9	64.9	47.3	75.4	71.2	69.4	71.9	62.9
39	Ind 844D	(Y)	51.7	54.4	67.0	46.7	87.1	73.0	49.1	74.4	62.9
41	Ky 203	(W)	52.0	55.9	70.2	42.7	78.2	76.2	55.9	69.8	62.6
42	Pfister 347	(Y)	54.1	60.7	62.6	52.6	78.0	67.1	54.9	61.4	61.4
43	Funk's G704	(Y)	46.5	57.7	68.3	43.4	71.5	88.3	45.0	66.2	60.9
44	Broadbent 235W	(W)	33.6	55.1	65.5	37.4	59.2	78.3	44.4	61.0	54.3
Varieties not included at all eight locations											
	Ky 2024	(Exp) (Y)				55.8					
	Ky 2101	(Exp) (W)				56.7				63.8	
	Ky 2113	(Exp) (W)	53.2	61.9		49.3	80.2				62.0
	Ky 2114	(Exp) (W)	55.3	60.0		45.3	71.8				
	S.S. Pocahantas	(Y)	56.6	59.8	63.1		77.0	66.2	51.4		
	S.S. Mohawk	(Y)	56.6	60.2	56.9		82.4	65.3	55.0		
	Pioneer 510	(W)			74.2						
	Pioneer 302	(Y)			63.7						
	DeKalb 825	(Y)						62.8	46.5	46.2	
	Tenn.Red Cob(OP)	(W)						69.5	26.7	71.3	
	Davis Yellow(OP)	(Y)						73.6	65.8	61.1	
	Neals Paymaster	(Y)									
	(OP)	(W)	52.1	42.6	67.2	34.3	66.0				
	Means		52.6	59.4	71.2	49.5	81.2	78.7	58.7	77.3	
	L. S. D.		7.6	5.5	10.1	7.3	14.0	11.2	17.3	17.2	

Table 3. Summary of Performance Data of Hybrid Tests in Kentucky, 1953.

Rank in Yield	Hybrid Number	Acre yield 8 tests bu.	Moisture at harvest		Root lodged plants		Broken stalks		Erect plants 7 tests %	Dead stalks 3 tests %	Ear Height 4 tests inch.
			8 tests %	8 tests %	2 tests %	2 tests %	7 tests %	2 tests %			
1	Ky 0228	71.9	18.4	3.0	7.8	7.2	89	3.4	51		
2	Ky 0110	71.6	17.6	2.1	4.5	3.0	94	3.3	52		
3	Ky 2018	70.9	18.0	11.3	3.7	3.8	92	3.3	45		
4	Ky 2026	70.4	17.9	18.8	5.6	6.2	87	3.2	50		
5	Ky 1005	70.2	17.2		3.1	3.0	96	5.0	48		
6	Ky 1023	70.1	18.8	8.2	5.6	4.4	91	3.4	48		
7	Ky 2106	70.0	16.0	1.2	5.4	2.2	94	2.8	46		
8	Ky 2030	69.8	18.0	8.6	2.1	6.7	93	3.8	45		
9	Ky 0109	69.7	18.3	0.9	0.8	1.2	99	3.3	47		
10	Ky 2105	69.2	15.8	0.4	4.2	2.9	95	0.8	42		
11	Ky 1110	68.9	19.1	0.9	1.2	1.3	98	1.1	42		
11	Funk's G91	68.9	16.3	4.6	2.0	2.6	96	5.2	44		
11	Ky 2001	68.9	17.5	6.8	4.8	7.4	91	5.1	44		
14	Ky 103	68.6	16.2	3.9	4.7	6.2	92	6.2	51		
15	Ky 7114B	68.1	17.5	7.6	5.1	3.5	92	4.4	48		
15	Ky 0216	68.1	15.0	1.8	1.1	4.8	97	1.8	50		
17	Ky 0105	68.0	18.4	3.4	6.1	4.7	92	6.0	50		
18	CB 8911W	67.8	19.6	1.9	2.6	2.2	96	0.3	54		
18	Ky 0217	67.8	14.9	0.8	3.2	3.4	95	2.0	47		
20	Ky 2111	67.7	15.6	2.7	4.7	2.6	94	6.2	44		
20	US 13	67.7	15.8	2.3	3.5	4.2	95	4.4	47		
20	Ky 1002	67.7	16.0	3.4	2.7	4.8	96	2.6	49		
23	Funk's G512	67.3	17.1		3.4	1.8	95	1.7	46		
23	Ky 2109	67.3	17.0		1.2	0.4	98		42		
23	Ky 1008	67.3	18.4	0.8	8.0	11.1	89	3.6	56		
26	Ky 1102A	67.2	19.9	5.0	0.6	1.7	97	1.1	49		
27	Ky 9105B	66.6	17.9	1.8	2.0	1.3	97	0.9	51		
28	Ky 9107	66.2	17.1	2.6	2.1	1.3	97	0.3	47		
29	US 523W	65.5	18.4	5.6	5.8	2.8	92	6.0	45		
30	Ky 2108	65.2	16.6	0.4	9.3	3.4	89	4.4	43		

Table 3. Con't

Rank in Yield	Hybrid Number	Moisture		Root		Broken Stalks			Erect plants 7 tests %	Dead stalks 3 tests %	Ear height 4 tests inch.
		Acre yield 8 tests bu.	at harvest 8 tests %	lodged plants 2 tests %	Mechan- ical 7 tests %	Corn borer 2 tests %					
31	CB 8902	(Exp) (Y)	18.7	5.7	4.1	2.5	94	1.1	44		
32	Funk's G134	(Y)	17.6	0.4	1.5	1.4	98	0.3	43		
33	Ky 2004	(Exp) (Y)	18.2	9.4	2.7	1.4	94	1.2	48		
34	Ky 0108	(Exp) (W)	18.9	4.3	0.9	2.1	97	3.1	50		
35	Ky 2107	(Exp) (W)	16.6		3.0	1.7	97	2.0	45		
36	CB 8925	(Exp) (Y)	17.5	6.4	4.2	2.6	93	4.3	48		
36	Ind 750B	(W)	18.4		1.8	1.8	98	1.5	46		
38	Stull 400W	(W)	17.6	6.8	1.9	1.4	96	1.2	46		
39	Ky 102	(Y)	17.3	0.4	5.8	12.0	91	2.9	52		
39	Ind 844D	(Y)	15.1	0.9	5.0	6.3	93	4.1	39		
41	Ky 203	(W)	17.9	2.6	9.1	5.7	88	4.6	49		
42	Pfister 347	(Y)	14.4	1.7	2.5	1.2	97	2.8	37		
43	Funk's G704	(Y)	17.4	0.8	1.4	1.2	98	4.9	43		
44	Broadbent 235W	(W)	20.2	9.6	1.7	0.4	95	2.8	48		
	Means		17.4	3.6	3.7	3.5	94	3.0	47		

(Y) Yellow hybrid, (W) white hybrid, (Exp) experimental hybrid - not available commercially.

Table 4. Summary of Average Performance Records for Hybrids Tested in Kentucky, 1944-1953.

	1952-1953		1951-1953		1950-1953		1949-1953		1944-1953	
	2 yr. Acre yield bu.	Plants erect %	3 yr. Acre yield bu.	Plants erect %	4 yr. Acre yield bu.	Plants erect %	5 yr. Acre yield bu.	Plants erect %	10 yr. Acre Yield bu.	Plants erect %
<u>White hybrids</u>										
Ky 203	59.3	91	61.3	86	67.4	82	73.3	82	72.5	80
US 523W	64.4	92	68.4	89	74.0	88	80.4	88		
Ky 7114B	62.6	94	64.4	90	72.0	86	77.9	87		
CB 8911W	65.1	96	69.0	92	77.0	91				
Ky 9105B	63.1	97	68.2	95	76.4	94				
Ky 0105	63.4	94	66.4	90	72.6	88				
Ky 0108	64.8	96	67.7	92						
Ky 0109	66.8	97	68.3	94						
Ky 0110	66.2	95	68.6	93						
Ind 750B	61.0	97	64.4	94	70.2	91	74.3	91		
Stull 400W	63.5	95	66.7	91	74.0	90	79.5	90		
Broadbent 235W	56.0	95	60.9	92	67.9	91	72.4	91		
Funk's G531W	63.4	95	66.9	94						
Ky 1102A	64.6	98								
Ky 1110	63.3	98								
Ky 2105	66.8	95								
Ky 2106	67.2	95								
<u>Yellow Hybrids</u>										
US 13	63.0	96	64.8	91	68.8	88	72.3	87	70.4	85
Ky 102	57.6	91	59.5	87	65.3	81	70.5	81	69.7	77
Ky 103	64.0	93	64.8	87	68.9	83	72.5	84	71.4	82
Ky 0228	69.2	88	70.3	82						
Ky 1002	65.2	96								
Ky 1005	65.0	96								
Ky 1008	64.0	92								
Funk's G91	63.4	97	66.8	94						

Table 5. Performance Data of Hybrid Test in Kenton, County, Kentucky, 1953.

Rank in Yield	Hybrid	Acre yield	Moisture at harvest	Root lodged plants	Broken stalks		Erect plants	Dead plants
					Mechan- ical	Corn borer		
1	US 13	76.3	15.3		4.4	1.8	93.8	5.3
2	Ky 2106	74.1	15.3		4.3		95.7	13.7
3	Ind 252A	73.0	13.8				100.0	3.4
3	Ky 2001	73.0	17.2		6.7	0.8	92.5	6.7
5	DeKalb 816	72.2	15.4	0.9	11.7		87.4	9.0
6	Ky 0228	71.9	19.7		22.5	1.7	75.8	5.0
7	Ind 750B	70.5	16.2		2.6		97.4	4.3
8	DeKalb 441D	67.4	16.5		8.1		91.9	11.7
9	Ind 608C	67.2	15.2		12.3		87.7	13.2
10	Ky 2105	67.1	16.1		9.4	0.9	89.7	9.4
11	Ky 2108	65.7	15.1		21.2		78.8	5.9
12	DeKalb 825	64.3	14.6		2.5		97.5	6.8
13	Ind 844D	64.0	15.0		7.6	0.8	91.6	12.7
14	Ky 103	63.9	14.5	2.5	7.6		89.9	10.1
15	DeKalb 898	62.9	17.0		15.5		84.5	6.0
16	US 523W	62.6	16.2	0.9	23.1		76.0	2.6
17	Ky 203	57.8	16.8		20.7	0.9	78.4	6.3
	Means	67.9	15.9	0.3-	10.6	0.4	88.7	7.8

(Y) Yellow hybrid, (W) white hybrid, (Exp) experimental hybrid - not available commercially.