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Kentucky ranked fifth in popcorn acreage in 1959, following Indiana, Illinois, Ohio, and Iowa. The value of the crop was $812,000 compared with $1,414,000 in 1958. Although yields per acre in 1959 were lower than in 1958, a slight increase in the price received by growers resulted in about the same return per acre.

Popcorn hybrids developed in the breeding programs at the Indiana, Iowa, Kansas, and Georgia agricultural experiments stations are included in the evaluation studies in Kentucky. Land is made available for these studies by Orrin Hull, Murray State College and Murray Wall, Hopkinsville. Their assistance and interest is appreciated and acknowledged.

One-, two- and three-year summaries of these tests are presented in tables 1-3. The average yield per acre of the 30 hybrids grown at Hopkinsville and Murray in 1959 was 2,914 pounds of ear corn and 4,633 pounds of ear corn, respectively.

On the basis of three-year data the newer hybrids are equal or superior to P32 in yield or standing ability or both. The hybrids P406A, Kansas KP1101, and Purdue Exp. 6415 performed very well and merit further consideration.

Experimental Procedures

Field Design

Each hybrid was planted in four plots at each of the two locations, with individual plots being two hills wide and five hills long. These plots were located in different parts of the testing field to minimize cultural and soil differences.

Yield

The corn from each plot was harvested and weighed individually. The yield of the hybrids was determined and is reported on the basis of pounds of ear corn per acre with a moisture content of 13.5 percent. Adjustments were made also for missing hills but not for other variation in stand. Therefore, the yields at each location reported in this report constitute an average yield of the four plots after all adjustments were made.

Moisture

The moisture content at harvest is the best measure of relative maturity of hybrids. One hybrid may be considered to be earlier than a second hybrid if its moisture content at harvest is consistently lower. Maturing thus determined is not absolute but is relative to the hybrids being compared.

The moisture in the grain of individual hybrids was determined at harvest by removing two rows of kernels from each of eight ears selected at random from each of the first three replications. The grain from the 24 ears was thoroughly mixed, and the moisture content of a 150-gram sample was determined with a Steinlite moisture meter.

Root Lodging

Plants which lean from the base of an angle of more than 30 degrees from the vertical are considered to be root-lodged. This character is expressed as a percentage which is obtained by counting the number of root-lodged plants and dividing by the number of plants present.

Stalk Lodging

A plant is considered to be stalk-lodged when the stalk is broken between the ear bearing node and ground level. This attribute is computed in a manner similar to that indicated for root lodging.

Ear Height

Ear height, distance from the base of the plant to the point of attachment of the upper ear, was measured visually using a scale with one-foot intervals. Visual ratings were made on four plots of each hybrid at each location.

Stand

All tests are planted at the rate of five kernels per hill and the resulting plants thinned to three per hill. The stand percentage was computed on the basis of the total plants present divided by the number of plants which would have been present if all had survived.

Diseases

Disease ratings were made visually on a plot basis, using a scale of 1-5 with 1 being resistant. This rating measures relative resistance to Southern and Stewart's Leaf Blight diseases.

Ear Appearance

Visual ratings of ear appearance were recorded at each location in 1957-58. A five-class rating scale was used, with the lower numbers representing the better appearing ears.

Table 1. Three-year summary of agronomic data recorded on performance evaluation study of popcorn hybrids grown near Hopkinsville and Murray, Kentucky in 1957-59.

Hybrid		Acre yield, lb, ear corn at 13.5% moisture	Moist. at Harv. %	Lodging Root %	Lodging Stalk %	Ear ht. ft.	Foliar disease grade, Southern	Foliar disease grade, Stewart's	Ear Appear. rating	Stand %
P 303	W	3,369	14.3	4.5	18.6	3.5	5.0	3.2	1.0	106.0
P 32	Y	3,743	15.8	3.6	16.7	3.6	3.0	2.8	1.0	93.0
P 406A	Y	4,371	15.7	1.1	5.8	4.0	2.0	2.0	2.0	101.1
Purdue Ex. 5369	Y	4,422	15.4	2.7	23.0	3.8	2.5	3.0	3.0	100.5
Purdue Ex. 6415	Y	4,277	15.7	1.2	6.0	3.7	2.0	1.8	1.0	101.9
Purdue Ex. 6448	Y	4,014	15.9	1.7	8.5	3.8	1.5	1.8	1.0	99.8
P 632	Y	4,113	16.5	2.1	17.7	4.1	2.5	2.1	2.0	98.4
Kansas KP 1101	Y	4,269	15.4	1.3	8.9	3.9	2.5	1.9	2.0	100.1
Iopop 6	Y	3,894	15.0	4.7	22.0	3.7	3.5	2.7	1.0	96.5
Iopop 8	Y	3,799	15.2	2.1	18.3	3.7	3.5	2.6	3.0	100.4
G.A.C.P. 6036	Y	3,616	16.4	1.1	14.5	3.0	3.0	2.3	3.0	94.2
Mean		3,990	15.6	2.4	14.5	3.7	2.8	2.4	1.8	99.3

Table 2. Two-year summary of agronomic data recorded on performance evaluation study of popcorn hybrids grown near Hopkinsville and Murray, Kentucky in 1958-59.

Hybrid		Acre yield, lb, ear corn at 13.5% moisture	Moist. at Harv. %	Lodging Root %	Lodging Stalk %	Dropped ears %	Ear Ht., Ft.	Foliar disease grade - Stewart's	Ear Appear. rating	Stand %
P 303	W	3,299	14.6	1.2	25.0		3.6	3.3	1.0	112.2
Iowa 894	W	3,577	14.8	2.6	27.1		3.7	3.2	2.0	91.2
P32	Y	3,822	16.4	0.9	21.5		3.5	2.5	1.0	97.6
P202	Y	3,158	15.5	0.5	31.4		3.0	2.9	2.0	90.7
P213	Y	3,803	15.4	0.7	26.7		3.9	2.4	2.0	93.8
P406A	Y	4,282	16.2		7.6		4.0	2.0	2.0	104.6
Purdue Exp 5369	Y	4,436	15.9	2.6	30.7		3.7	2.9	3.0	104.1
Purdue Exp 6415	Y	4,269	16.1	0.5	8.1		3.6	1.8	1.0	105.2
Purdue Exp 6448	Y	3,891	16.4	0.8	12.4		3.7	1.8	1.0	102.0
Purdue Exp 731160	Y	4,507	16.0	2.9	22.0		3.9	2.1	3.0	108.3
Purdue Exp 83249	Y	4,897	16.3	1.7	20.3		4.2	1.9	3.0	100.7
Purdue Exp 43139	Y	4,440	16.1	0.2	5.1		3.7	1.8	2.0	110.6
P632	Y	4,076	17.0	1.3	23.8		4.1	2.1	2.0	101.3
Kansas KP1101	Y	4,293	15.9	0.5	11.9		3.8	1.9	2.0	100.4
Kansas KP1103	Y	3,610	16.1		15.3		3.0	1.9	2.0	90.7
Iopop 6	Y	3,654	15.2	1.4	30.9	0.2	3.7	2.7	1.0	96.3
Iopop 8	Y	3,734	15.8	1.7	24.2		3.7	2.6	3.0	101.6
Iowa 3574	Y	3,156	15.5		13.0	0.2	3.2	3.2	2.0	102.0
Iowa 3591	Y	3,308	16.1		5.9		3.1	3.0	1.0	103.8
G.A.C.P. 6036	Y	3,425	16.8	0.2	21.0		3.0	2.3	3.0	95.3
Mean		3,882	15.9	1.0	19.2	0	3.6	2.4	2.0	100.6

Table 3. Annual summary of agronomic data recorded on performance evaluation study of popcorn hybrids compared in experiments 24 and 25 grown near Hopkinsville and Murray, Kentucky in 1959.

Hybrid		Acre yield, lb, ear corn at 13.5% moisture	Moist. at Harv. %	Lodging Root %	Lodging Stalk %	Ear Ht., Ft.	Foliar disease grade Stewart's	Stand %
P303	W	3,195	15.2	1.9	39.0	3.8	3.5	109.7
Iowa 894	W	3,375	15.0	5.1	36.1	3.8	3.3	88.1
Iowa 901	W	2,174	14.9		47.8	3.3	3.5	89.1
Iowa 902	W	2,593	15.4		36.8	3.3	3.3	111.1
Purdue Exp 7350	W	3,656	15.9	4.0	27.6	4.0	3.5	115.3
Purdue 32	Y	3,785	16.1	1.4	27.9	3.3	1.5	96.0
Purdue 202	Y	3,204	16.0	1.0	42.7	3.0	2.8	94.2
Purdue 213	Y	3,955	15.6	1.4	26.4	4.0	2.3	84.2
G.A.C.P. 7071	Y	2,933	16.8	1.7	49.0	2.3	2.3	78.5
Purdue 406A	Y	4,591	16.5		9.3	4.3	2.0	110.0
Iopop 6	Y	3,330	15.5	2.8	38.9	3.8	2.8	94.2
Iopop 8	Y	3,926	16.0	3.4	26.6	4.0	2.3	101.9
Iowa 4258	Y	3,557	15.4	0.7	20.8	4.0	3.0	90.6
Iowa 3574	Y	3,012	16.0		24.7	3.0	3.3	102.3
Iowa 3578	Y	3,309	15.9	1.0	27.6	4.0	3.3	100.2
Iowa 3581	Y	3,556	15.9	0.8	24.8	3.0	2.3	113.2
Iowa 3591	Y	3,298	16.4		10.8	3.0	2.5	110.4
Purdue Exp 5369	Y	4,122	16.3	4.8	43.8	3.3	2.3	103.6
Purdue Exp 6415	Y	4,427	16.2	0.9	12.3	3.5	1.5	113.2
Purdue Exp 6448	Y	3,856	16.8	1.5	18.8	3.8	1.5	104.3
Purdue Exp 43139	Y	4,499	16.2	0.4	8.0	3.5	1.8	120.3
P632	Y	4,019	16.9	1.3	26.2	3.8	1.8	107.2
Purdue Exp 731160	Y	4,466	16.2	4.1	33.4	3.8	2.0	109.4
Purdue Exp 83249	Y	5,081	16.5	3.4	36.7	4.3	1.5	106.3
KP1101	Y	4,541	16.1	1.0	10.9	3.8	1.8	103.6
KP1103	Y	3,735	16.3		25.5	3.0	1.5	83.8
KP1143	Y	4,919	16.1		31.4	4.3	2.5	107.0
KP1089	Y	4,289	16.9		16.8	3.5	1.8	106.6
KP1141	Y	4,616	16.3	0.9	12.7	4.0	1.5	111.8
G.A.C.P. 6036	Y	3,109	16.7		28.2	2.8	2.0	93.1
Mean		3,774	16.1	1.3	27.0	3.6	2.3	102.0

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