

RESULTS OF THE KENTUCKY
HYBRID POPCORN PERFORMANCE TRIALS

1962

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Planted acreage for popcorn in Kentucky was down by 13 percent during 1962. This year, 22,500 acres was planted as compared with 25,800 in 1961. The average acreage planted for the period 1951-60 was 21,020 acres. Kentucky ranked fourth behind Iowa, Indiana, and Illinois in acres planted in 1962 as compared with fifth in 1961.

This year Kentucky produced an average yield of 1750 pounds per acre as compared with 2350 pounds per acre in 1961. This reduction in yield can be attributed mainly to dry weather in August.

Popcorn hybrids developed in the breeding program at the Indiana and Iowa Agricultural Experimental Stations are included in the evaluation studies in Kentucky. Land was made available for these studies by Orrin Hull of Murray State College, Murray, Ky., and Graham Duncan, Hopkinsville, Ky. Their assistance and interest are acknowledged and appreciated.

Three-, two- and one-year summaries are presented in Tables 1-3. Tables 4 and 5 are the summaries of the 1962 experiments grown at Hopkinsville and Murray. The Murray data for 1961 are not included in Tables 1 and 2.

On the basis of three- and two-year data, Purdue 9318, an experimental white hybrid, appears to be the best white hybrid tested. P303 has good performance on the basis of past experiments and is still considered to be the best white hybrid available for planting in Kentucky. Although Purdue 9318 yielded only slightly higher than P303, Purdue 9318 was superior in standing ability. The two hybrids are about the same on the basis of moisture content at harvest.

Iowa 3581, P32, P406A and P410 appear to be slightly better than the other yellow hybrids that are available for planting, based on three-year data. Of these three, P410 was the highest yielding hybrid, but was inferior in standing ability to Iowa 3581 and P32. Purdue 8367 cms and Purdue 8376 cms, two yellow experimental hybrids, appear promising based on their yielding and standing ability records.

On the basis of two-year data, P406A, P410 and Purdue 8367 cms were the best yielding yellow hybrids tested. P632 was low in yield and inferior in standing ability as compared to the other yellow hybrids. Purdue 8376 cms ranked fourth in yielding ability, behind P406A, Purdue 8367 cms, and P410. There was very little difference in standing ability among these four hybrids. All other hybrids appear to be about equal in performance for the two-year test.

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. Maturity thus determined is not absolute but is relative to the hybrids being compared.

The moisture content of 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 at 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 5 kernels per hill and the resulting plants thinned to 3 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

In 1960 disease ratings were taken at Murray for Southern Leaf Blight and are reported in Table 1. Visual ratings were made on a plot basis, using a scale of 1-5 with 1 being resistant. Leaf blight was not severe enough in 1961-62 to justify taking ratings.

Table 1. Three-year summary of agronomic data recorded on popcorn performance trials grown at Murray and Hopkinsville, Kentucky in 1960-62 ^{1/}

Pedigree	Color	Acre yield lbs.	Moist. at harv. %	Lodging		Dropped ears %	Ear ht. ft.	Foliar Disease grade ^{2/} may %	Stand %
				Root %	Stalk %				
P303	W	3658	14.0	3.9	21.3	0.1	3.8	1.3	95.9
Purdue 9318	W	3880	14.5	9.9	10.2	0.1	4.0	1.8	98.0
White average		3769	14.3	6.9	15.8	0.1	3.9	1.6	97.0
Ia 3581	Y	3836	14.2	0.6	16.6		3.7	2.3	97.8
P32	Y	3865	14.9	9.6	12.0		4.2	2.3	94.1
P406A	Y	3756	14.6	7.2	22.7	0.1	3.8	1.5	96.9
P410	Y	3873	14.6	4.2	22.9		3.6	1.8	96.7
P632	Y	3087	14.4	3.5	22.9	0.1	3.5	1.8	93.6
Purdue 8367 cms	Y	4220	14.8	2.2	18.0		4.1	1.8	99.2
Purdue 8376 cms	Y	4263	15.3	3.3	26.2		4.0	1.5	94.1
Yellow average		3843	14.7	4.4	20.2	0.0	3.8	1.9	96.1
Overall average		3826	14.6	4.9	19.2	0.0	3.9	1.8	96.3

^{1/} Murray data not included for 1961

^{2/} 1960 only

Table 2. Two-year summary of agronomic data recorded on popcorn performance trials grown at Murray and Hopkinsville, Kentucky in 1961-62^{1/}

Pedigree	Color	Acre yield lbs.	Moist. at harv. %	Lodging Root %	Stalk %	Dropped ears %	Ear ht. ft.	Stand %
P303	W	2936	13.8	6.5	33.0	0.2	3.7	95.8
Purdue 9318	W	3439	14.4	16.5	12.8		3.5	100.5
White average		3188	14.1	11.5	22.9	0.1	3.6	98.2
Iopop 10	Y	3569	14.1	3.7	28.8	0.2	4.0	97.5
Iowa 3581	Y	3549	14.1	1.1	23.3		3.4	97.0
P32	Y	3691	15.1	15.9	17.3		4.2	99.3
P406A	Y	4423	14.7	10.7	26.6	0.2	4.3	99.5
P410	Y	4267	14.7	6.9	33.7		4.1	96.2
P632	Y	3013	14.6	5.8	34.5	0.2	3.9	96.8
Purdue 8367 cms	Y	4524	15.0	3.6	26.4		4.1	99.4
Purdue 8376 cms	Y	4209	15.6	5.4	38.7		4.1	95.3
Yellow average		3906	14.7	6.6	28.7	0.0	4.0	97.6
Overall average		3760	14.6	7.6	27.5	0.1	3.9	97.7

^{1/} Murray data not included in 1961.

Table 3. Average of agronomic data recorded on popcorn performance trials grown at Hopkinsville and Murray, Kentucky compared in Experiment 37 and 38 in 1962.

Entry No.	Pedigree	Color	Acre yield lbs.	Moist. at harv. %	Lodging Root %	Stalk %	Ear ht. ft.	Stand %
08	P303	W	2444	14.1	9.8	44.2	3.7	94.1
02	Purdue 7355	W	3126	14.5	28.7	16.4	4.3	99.4
21	Purdue 9312	W	2766	14.1	27.3	25.6	3.3	102.2
24	Purdue 9318	W	2622	13.8	24.8	11.8	3.3	102.5
	White average		2740	14.1	22.7	24.5	3.7	99.6
15	Iopop 10	Y	3068	14.4	5.2	40.0	3.8	97.9
20	Iowa 3581	Y	3333	14.7	1.3	31.4	3.5	98.8
14	P32	Y	2843	15.3	23.6	23.5	4.0	99.7
09	P213	Y	3644	15.2	2.8	69.1	3.8	99.4
22	P406A	Y	3731	14.5	16.0	35.8	4.5	101.3
03	P410	Y	3337	14.5	10.4	47.4	3.8	95.4
07	P605	Y	3302	14.5	6.4	47.8	4.4	97.9
25	P632	Y	2961	15.5	7.8	38.1	4.3	95.3
06	Purdue 0368	Y	3408	14.4	4.8	40.5	4.1	98.5
05	Purdue 0373	Y	3194	15.1	13.0	46.7	4.7	97.5
10	Purdue 0375	Y	3663	14.6	5.4	52.6	3.8	98.5
04	Purdue 8367 cms	Y	3757	14.9	5.1	33.0	3.7	99.4
01	Purdue 8376 cms	Y	3820	15.4	6.5	54.1	3.7	95.6
12	Purdue 8379 cms	Y	4162	14.7	2.5	62.2	3.8	100.7
18	Purdue 9343	Y	2777	13.8	4.7	19.7	3.8	90.4
11	Purdue 83238	Y	3127	14.8	18.8	43.8	4.2	100.0
23	Purdue 83250	Y	3476	14.8	3.6	36.3	4.4	97.2
16	Purdue 83251	Y	3669	15.0	6.0	43.5	4.7	100.0
19	Purdue 83263	Y	3530	14.9	9.9	37.5	3.7	97.5
13	Purdue 93736	Y	2559	14.4	14.5	27.2	3.5	91.9
17	Purdue 93746	Y	3258	14.8	14.5	47.9	3.8	92.8
	Yellow average		3363	14.8	8.7	40.3	4.0	97.4
	Overall average		3263	14.7	10.9	39.1	3.9	97.7

Table 4. Average agronomic data recorded on popcorn performance trials compared in Experiment 37 grown near Hopkinsville, Kentucky in 1962.

Entry No.	Pedigree	Color	Acre yield lbs.	Moist. at harv. %	Lodging		Ear ht. ft.	Stand %
					Root %	Stalk %		
08	P303	W	2371	13.2	2.7	42.2	3.0	91.9
02	Purdue 7355	W	3116	13.0	12.7	15.7	3.8	103.8
21	Purdue 9312	W	2887	13.3	4.8	31.0	3.0	105.0
24	Purdue 9318	W	2843	12.9	3.0	19.8	3.0	104.4
	White average		2804	13.1	5.8	27.2	3.2	101.3
15	Iopop 10	Y	2794	13.8	0.0	38.6	3.3	98.8
20	Iowa 3581	Y	3338	13.7	0.0	20.1	3.0	99.4
14	P32	Y	3156	13.5	6.3	28.8	3.5	100.0
09	P213	Y	4343	13.9	0.0	56.3	3.3	98.8
22	P406A	Y	4562	13.4	4.8	37.3	4.0	103.8
03	P410	Y	3234	13.8	4.0	37.3	3.0	93.8
07	P605	Y	4084	13.2	4.4	35.8	3.5	99.4
25	P632	Y	3516	14.0	1.3	37.6	3.5	98.1
06	Purdue 0368	Y	3647	13.5	1.3	26.9	3.3	97.5
05	Purdue 0373	Y	3240	13.9	0.0	37.7	4.0	96.2
10	Purdue 0375	Y	4172	13.2	1.9	42.3	3.0	97.5
04	Purdue 8367 cms	Y	4074	13.8	0.0	40.0	3.3	100.0
01	Purdue 8376 cms	Y	3815	15.2	2.7	59.1	3.3	93.1
12	Purdue 8379 cms	Y	4287	13.4	1.9	50.6	3.3	101.3
18	Purdue 9343	Y	2534	13.0	0.7	9.4	3.3	86.9
11	Purdue 83238	Y	3257	13.7	5.6	35.6	3.5	100.0
23	Purdue 83250	Y	3720	13.6	1.9	28.1	4.0	100.0
16	Purdue 83251	Y	4106	14.1	3.8	31.3	3.5	100.0
19	Purdue 83263	Y	3873	13.7	1.9	27.5	3.3	100.0
13	Purdue 93736	Y	2164	13.6	4.1	22.8	3.0	90.6
17	Purdue 93746	Y	3789	13.6	2.0	42.3	3.0	93.1
	Yellow average		3607	13.7	2.7	35.5	3.4	97.5
	Overall average		3476	13.6	2.9	34.2	3.3	98.1

Difference necessary for significance at 5% level = 274 pounds.

Coefficient of variability = 5.2%

Table 5. Average agronomic data recorded on popcorn performance trials compared in Experiment 38 grown near Murray, Kentucky in 1962.

Entry No.	Pedigree	Color	Acre yield lbs.	Moist. at harv. %	Lodging		Ear ht. ft.	Stand %
					Root %	Stalk %		
08	P303	W	2516	14.9	16.9	46.1	4.3	96.3
02	Purdue 7355	W	3135	15.9	44.7	17.1	4.8	95.0
21	Purdue 9312	W	2644	14.8	49.7	20.1	3.5	99.4
24	Purdue 9318	W	2401	14.6	46.6	3.7	3.5	100.6
	White average		2674	15.1	39.5	21.8	4.0	97.8
15	Iopop 10	Y	3342	15.0	10.3	41.3	4.3	96.9
20	Iowa 3581	Y	3327	15.6	2.5	42.7	4.0	98.1
14	P32	Y	2529	17.0	40.9	18.2	4.5	99.4
09	P213	Y	2945	16.4	5.6	81.9	4.3	100.0
22	P406A	Y	2900	15.5	27.2	34.2	5.0	98.8
03	P410	Y	3440	15.2	16.8	57.4	4.5	96.9
07	P605	Y	2519	15.8	8.4	59.7	5.3	96.3
25	P632	Y	2406	17.0	14.2	38.5	5.0	92.5
06	Purdue 0368	Y	3168	15.3	8.2	54.1	4.8	99.4
05	Purdue 0373	Y	3147	16.3	25.9	55.7	5.3	98.8
10	Purdue 0375	Y	3154	15.9	8.8	62.9	4.5	99.4
04	Purdue 8367 cms	Y	3440	15.9	10.1	25.9	4.0	98.8
01	Purdue 8376 cms	Y	3824	15.6	10.2	49.0	4.0	98.1
12	Purdue 8379 cms	Y	4036	16.0	3.1	73.8	4.3	100.0
18	Purdue 9343	Y	3030	14.6	8.7	30.0	4.3	93.8
11	Purdue 83238	Y	2996	15.8	31.9	51.9	4.8	100.0
23	Purdue 83250	Y	3231	15.9	5.3	44.4	4.8	94.4
16	Purdue 83251	Y	3231	15.9	8.1	55.6	5.8	100.0
19	Purdue 83263	Y	3186	16.1	17.8	47.4	4.0	95.0
13	Purdue 93736	Y	2953	15.1	24.8	31.5	4.0	93.1
17	Purdue 93746	Y	2726	15.9	27.0	53.4	4.5	92.5
	Yellow average		3120	15.8	15.0	48.1	4.6	97.2
	Overall average		3049	15.7	18.9	43.6	4.5	97.3

Difference necessary for significance at 5% level = 646 pounds.

Coefficient of variability = 13.4%