RESULTS OF THE KENTUCKY HYBRID POPCORN PERFORMANCE TRIALS 1961

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Production of popcorn in Kentucky during 1961 totaled 59 million pounds - a new record and a 72-percent increase above the 34 million pounds produced in 1960. Kentucky ranked fourth behind Indiana, Iowa, and Illinois in 1961 as compared with sixth in 1960. Total value of the crop was $1,733,000, a $753,000 increase from last year. An average yield of 2,350 pounds per acre for Kentucky far exceeds the previous 2,050-pound record set in 1958. Plentiful moisture, use of better hybrids, and improved weed control contributed to producing the new record yields.

Popcorn hybrids developed in the breeding programs at the Indiana, Iowa, and Kansas agricultural experiment 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 Murray Wall, Hopkinsville, Ky. Their assistance and interest are appreciated and acknowledged.

Three-, two- and one-year summaries are presented in Tables 1-3. Table 3 is the summary of the 1961 experiment grown at Hopkinsville. Although the popcorn test at Murray was harvested this year, the data were too variable to have any significance and are not reported.

Purdue 303 continued to be the best white hybrid available for planting in Kentucky. On the basis of the two-year agronomic data, P303 and Purdue 9315, an experimental white hybrid, appears to be comparable in ear height, yielding and standing ability. Purdue 9318 and Purdue 9338, two white experimental hybrids, were the highest yielding for the two-year period, but were inferior in standing ability and possess higher ear placement than P303.

On the basis of three-year data, Iopop 8, P32 and Purdue 83249 appear to be the best performing yellow hybrids tested. KP 1101, a Kansas experimental appears promising and worthy of consideration on the basis of its outstanding record for standing ability. The performance of P406A and P632 was disappointing in comparison with the other hybrids tested.

Yellow hybrids, Iopop 8, Iowa 3595, KP 1148, P32, Purdue 8367 cms and Purdue 8376 cms performed well on the basis of the two-year data. P406A and P632 were low in yield and inferior in standing ability and were not comparable to the other yellow hybrids tested during this period. All other hybrids were comparable and approximately equal in yielding and standing ability.

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 mode 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 1959 and 1960 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.

Table 1. Three-year summary of agronomic data recorded on popcorn performance trials grown at Murray and Hopkinsville, Kentucky in 1959-61[1/]

Entry No.	Pedigree	Color	Acre yield, lb	Moist at harv %	Lodging			Ear ht ft	Foliar Disease Grade		Stand %
					Root %	Stalk %	Dropped ears %		May 1960	Stewart's 1959	
01	Iowa 894	W	3496	14.1	1.5	13.0		4.0	2.5	3.3	87.6
02	P303	W	4182	14.5	0.6	14.7	0.1	3.9	1.3	3.5	100.4
	White Average		3839	14.3	1.1	13.9	0.1	4.0	1.9	3.4	94.0
03	Iopop 8	Y	4535	15.0	1.2	13.9		3.9	1.8	2.3	97.9
04	Iowa 3581	Y	4022	14.6	0.3	11.8		3.7	2.3	2.3	102.2
05	KP 1101	Y	4244	14.8	0.3	7.2		3.9	2.3	1.8	97.7
06	P32	Y	4207	15.1	0.5	11.0		4.1	2.3	1.5	90.7
07	P406A	Y	3714	15.1	1.1	13.4	0.1	3.5	1.5	2.0	98.2
08	P632	Y	3420	14.8	0.7	14.6	0.1	3.2	1.8	1.8	95.6
09	Purdue 83249	Y	4403	14.7	1.0	15.7		3.7	2.5	1.5	97.3
	Yellow Average		4078	14.9	0.7	12.5	0.0	3.7	2.1	1.9	97.1
	Overall Average		4025	14.7	0.8	12.8	0.0	3.8	2.0	2.2	96.4

[1/] Murray data not included for 1961.

Table 2. Two-year summary of agronomic data recorded on popcorn performance trials grown at Murry and Hopkinsville, Kentucky in 1960-61[1/]

Entry No.	Pedigree	Color	Acre yield, lb	Moist at harv %	Lodging Root %	Lodging Stalk %	Dropped ears %	Ear ht ft	Foliar Disease Grade May 1960	Stand %
01	Iowa 894	W	3916	13.8		3.9		4.2	2.5	89.4
02	P303	W	4468	14.0		6.0	0.2	3.8	1.3	97.1
03	Purdue 9315	W	4415	14.5	0.4	5.8	0.2	4.0	1.0	87.3
04	Purdue 9318	W	4718	14.9		9.1	0.2	4.5	1.8	95.0
05	Purdue 9338	W	4899	14.0		7.1		4.3	1.0	96.9
	White Average		4483	14.2	0.1	6.4	0.1	4.1	1.5	93.1
06	Iopop 8	Y	4789	14.4	0.3	8.3		3.7	1.8	96.3
07	Iowa 3581	Y	4172	13.9	0.2	6.7		3.9	2.3	97.1
08	Iowa 3595	Y	4429	14.4	0.2	9.9	0.4	4.0	2.5	91.3
09	Iowa 4304	Y	4088	14.2		6.6	0.2	4.1	1.5	94.9
10	KP 1101	Y	4087	14.1		6.0		3.7	2.3	96.1
11	KP 1148	Y	4641	14.1		8.6	0.2	3.9	2.0	89.0
12	KP 1152	Y	4260	14.4	0.2	6.2		4.2	2.0	90.1
13	P32	Y	4546	14.7	0.2	4.4		4.4	2.3	90.3
14	P406A	Y	3772	14.6	1.3	13.9	0.2	3.3	1.5	94.0
15	P410	Y	4230	14.6		6.5		3.5	1.8	97.5
16	P632	Y	3171	13.7	0.6	12.8	0.2	3.0	1.8	92.5
17	Purdue 8367 cms	Y	4529	14.7	0.2	8.0		4.3	1.8	99.0
18	Purdue 8376 cms	Y	4558	15.2	1.1	7.6		4.2	1.5	93.1
19	Purdue 83249	Y	4264	13.8		8.4		3.6	2.5	94.4
	Yellow Average		4253	14.3	0.3	8.1	0.1	3.8	2.0	94.0
	Overall Average		4313	14.3	0.2	7.7	0.1	3.9	1.9	93.8

1/ Murray data not included for 1961

Table 3. Average agronomic data recorded on popcorn performance trials compared in Experiment 26 grown near Hopkinsville, Kentucky in 1961.

Entry No.	Pedigree	Color	Acre yield, lb	Moist at harv %	Lodging Root %	Lodging Stalk %	Lodging Dropped ears %	Ear ht ft	Stand %
2601	Iowa 894	W	5775	13.9		5.0		4.8	99.4
2602	P303	W	3928	13.1		10.7	0.6	3.3	99.4
2603	Purdue 9315	W	4910	14.7	1.3	9.0	0.6	4.3	97.5
2604	Purdue 9318	W	5083	15.5		14.8	0.6	3.8	96.9
2605	Purdue 9338	W	5703	12.9		7.0		5.0	98.8
	White Average		5080	14.0	0.3	9.3	0.4	4.2	98.4
2606	Iopop 8	Y	4845	13.6		5.8		3.3	96.3
2607	Iopop 10	Y	4581	13.6	0.6	6.5	0.6	4.3	96.9
2608	Iowa 913	Y	3613	13.8		18.2		3.5	96.3
3609	Iowa 3581	Y	3992	12.8	0.7	7.3		3.3	93 8
2610	Iowa 3595	Y	4934	14.1	0.6	17.0	1.3	4.3	99.4
2611	Iowa 4304	Y	4465	13.2		3.8	0.6	4.3	98.8
2612	Iowa 4308	Y	4989	15.3		11.4		4.8	98.8
2613	KP 1101	Y	3894	13.0		7.5		3.0	100.0
2614	KP 1148	Y	5363	13.3		15.8	0.6	4.5	98.8
2615	KP 1152	Y	5554	14.3	0.6	10.1		4.5	98.8
2616	KP 1174	Y	5393	14.7	0.6	17.2		4.5	98.1
2617	P32	Y	5399	14.6	0.6	5.1		4.5	98.8
2618	P406A	Y	5819	15.1		8.4	0.6	4.0	96.3
2619	P410	Y	6139	15.2		6.4		4.8	98.1
2620	P632	Y	3125	12.7	1.9	27.5	0.6	3.0	100.0
2621	Purdue 6435A	Y	4641	13.4	0.6	9.7		4.0	96.3
2622	Purdue 8367 cms	Y	6072	15.2	0.6	13.2		4.8	99.4
2623	Purdue 8376 cms	Y	5000	16.1	3.3	7.9		4.8	95.0
2624	Purdue 83237	Y	5771	15.1	1.3	7.5		4.8	99.4
2625	Purdue 83249	Y	4929	13.5		14.0		4.3	98.1
	Yellow Average		4926	14.1	0.6	11.0	0.2	4.2	97.9
	Overall Average		4963	14.1	0.5	10.5	0.2	4.2	98.0

Difference necessary for significance at 5% level = 424 pounds
Coefficient of variability = 6.1%

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