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Tests of
Corn Hybrids and Varieties
at Seven Locations in Mississippi
1942

By

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with

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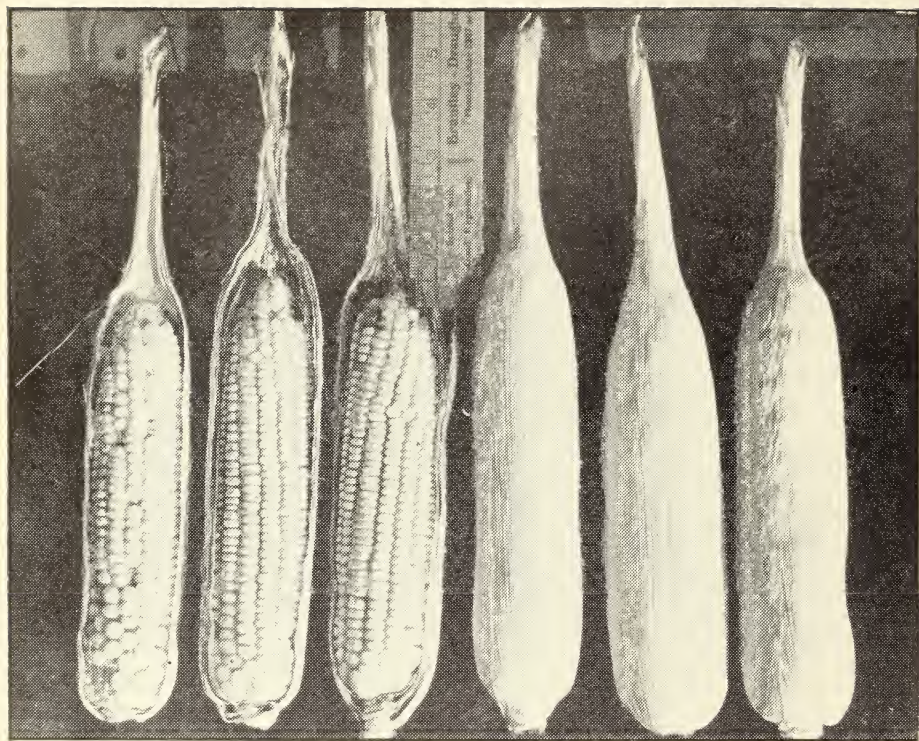
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Type of husk protection needed to protect corn against field infestation by weevils. Generally speaking, ears with husks which barely cover the tips are more severely damaged by weevils and corn ear worm. Better husk covering is one of the objectives sought in the development of Southern corn hybrids.

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Hybrid Corn Tests,* 1942

By W. H. FREEMAN,** S. P. CROCKETT, E. B. FERRIS,
T. E. ASHLEY, T. F. AKERS, and PROCTOR E. GULL

Hybrid corn testing was expanded in 1942 to include the performance of 5 varieties and 17 hybrids at 7 locations throughout the State, in comparison with the 3 check varieties: Mosby, College 47, and Neal Paymaster. Of these varieties and hybrids 10 were yellow and 15 were white.

The new hybrids and varieties were introduced as part of the search for strains of corn which might be adapted to Mississippi conditions, as a phase of the expanded program of corn research work being done by the Mississippi Experiment Station in cooperation with the Bureau of Plant Industry, U. S. Department of Agriculture.

Of special interest were yellow varieties, and varieties with good husk protection which would be of special value where heavy field infestations of rice weevil are common. The varieties new in the tests were Hastings' Yellow Prolific, Florident White, Florident Yellow, Yellow Paymaster, and Synthetic No. 2. Synthetic No. 2 is a mixture of six Mosby topcrosses which can be handled as an ordinary open-pollinated variety, thus eliminating the necessity of remaking the cross each year as must be done in the case of corn hybrids.

New hybrids on test this year were Louisiana hybrids 389, 398A, and 468; Texas hybrids 8, 12, and 14; and Missouri 8. Wood's S-320, Funk's G-703 and G-713 are in the main tests for the first time, having been previously tested in preliminary tests for one year. Varieties

and hybrids included in the 1942 tests, together with the name and address of the grower or seed company contributing the seed of each, are listed in table 1.

The tests this year were set up on the basis of a balanced lattice design so that more accurate comparisons might be made between variety means. In all cases this type of analysis proved to be more efficient than when the tests were analyzed as randomized complete blocks.

There were six replications of each test at each location. The plots were 2 rows wide and varied in length from 12 to 20 hills from one station to another, but were all the same size for any one location. Each test was checkrowed to facilitate handling. All seed were treated with a commonly used mercurial dust fungicide before planting, and plantings were made heavy and later thinned to obtain as nearly uniform stands as possible.

Fertilizer Treatments

Cultural and fertilizer practices at the different locations varied from one station to another, but were uniform for each test. At State College, corn followed corn and the only fertilizer treatment was to sidedress with 200 pounds per acre of nitrate of soda. The West Point station followed the practice of bedding the ground in the fall and planting on the ridge at an early date in the spring. The test followed soybeans and received no fertilizer. The Holly Springs test followed corn on land that has been fertilized with phosphates but not in 1942.

*Mississippi Agricultural Experiment Station and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, Agricultural Research Administration, U. S. Department of Agriculture cooperating.

**Mr. Freeman was Associate Agronomist for the Mississippi Agricultural Experiment Station until October 1942, after which he has been Associate Agronomist, Division of Cereal Crops and Diseases, Bureau of Plant Industry.

Table 1. Varieties and hybrids in the hybrid corn tests and the grower or company contributing the seed.

Hybrid or variety	Color	Seed source
Mosby	White	Miss. Agr. Exp. Sta., State College, Miss.
College 47	White	R. W. Killingsworth, Lorman, Miss.
Neal Paymaster	White	Paul Neal, Lebanon, Tenn.
Hastings' Yellow Prolific	Yellow	H. G. Hastings Co., Atlanta, Ga.
Louisiana 468	White	La. Agr. Exp. Station, Baton Rouge, La.
Florident White	White	Geo. W. Munroe, Quincy, Florida
Florident Yellow	Yellow	Geo. W. Munroe, Quincy, Florida
Yellow Paymaster	Yellow	H. E. Gibson, Lenoir City, Tenn.
Florida W-1	White	Fla. Agr. Exp. Sta., Gainesville, Fla.
Funk's G713	Yellow	Funk Bros. Seed Co., Bloomington, Ill.
Louisiana 123	White	La. Agr. Exp. Sta., Baton Rouge, La.
Louisiana 389	White	La. Agr. Exp. Sta., Baton Rouge, La.
Louisiana 398A	White	La. Agr. Exp. Sta., Baton Rouge, La.
Louisiana 3802	White	La. Agr. Exp. Sta., Baton Rouge, La.
Louisiana 3813	White	La. Agr. Exp. Sta., Baton Rouge, La.
Missouri 8	Yellow	McMullin Estate, Sikeston, Mo.
Tennessee 10	White	Fred M. Hull, Russellville, Tenn.
Tennessee 15	White	Eugene Adkins, Veto, Alabama
Funk's G703	Yellow	Funk Bros. Seed Co., Bloomington, Ill.
Texas 8	Yellow	Tex. Agr. Exp. Sta. No. 6, Denton, Texas
Texas 12	Yellow	Tex. Agr. Exp. Sta. No. 5, Temple, Texas
Texas 14	Yellow	Tex. Agr. Exp. Sta. No. 6, Denton, Texas
Wood's S210	Yellow	T. W. Wood and Son, Richmond, Virginia
Wood's S320	White	T. W. Wood and Son, Richmond, Virginia
Synthetic No. 2	White	Miss. Agr. Exp. Sta., State College, Miss.

The test was later sidedressed with nitrate of soda at 200 pounds per acre.

The Raymond test was on ground that had been in corn in 1941. A heavy growth of bur clover was turned under in the spring of 1942, followed with a broadcast application of 300 pounds per acre of 0-8-8 fertilizer. The corn was later sidedressed with 120 pounds per acre of nitrate of soda. The Natchez test followed a green manure crop of vetch. Corn was grown on the test land in 1941 and also followed vetch. The only fertilizer applied was a sidedressing of 200 pounds per acre of nitrate of soda. The Poplarville test followed a green manure crop of Austrian winter peas on land that had grown corn the previous year. Fertilizer was applied in the row by distributor at planting time, at the rate of 600 pounds per acre of 6-8-4.

Explanation of Notes

In computing yields, field weights were converted to bushels of shelled corn per acre, shelling percentages being previous-

ly determined for each entry at each location. Two replications were shelled at each location with the exception of West Point where only one replication of each entry was shelled to determine the shelling percentages.

Poor stands occurred at West Point, Natchez, and Poplarville, so that yields of entries were adjusted to a uniform average stand. At West Point stands were poor because of a dry period following planting; at Natchez and Poplarville poor stands resulted from too much rain following planting. At the other locations stands were fairly comparable and yields were not adjusted.

The tables present the yields on the basis of total yields in bushels per acre and as a percentage of the average of the yields of the three check varieties. Plot stands are presented as a percentage of perfect stand, prolificacy is presented on the basis of ears per hundred plants. Actual counts were made on two kinds of lodging: Root-lodging, the result of

a poor root system or roots weakened by insects, diseases, or other factors; and stalk-lodging, which is due to a weak or diseased condition of the stalks, allowing the stalk to break under adverse conditions.

Husk grades are an estimate of husk extension. Four grades were used, ranging from "O", indicating ear tips exposed, to a grade of "3", indicating an extension of the husk 3 inches or more beyond the tip of the ear. Five grades were used in estimating weevil damage and earworm damage: the lower the grade the less the amount of damage, the estimates being made on a plot basis. Weevil damage was estimated only at those locations where damage was heavy enough to give reliable comparisons, and earworm damage was estimated only at State College. Estimates were made by different observers at Poplarville and State College.

Because yields of hybrids and varieties cannot be determined with absolute accuracy, a value is determined by statistical analysis which can be used as a measure in comparing the yields of varieties and hybrids. A difference of any two varieties or hybrids must exceed this value before differences can be considered significant and be expected to exist under a similar set of environmental conditions.

For the convenience of the reader, a statement is inserted in the tables giving the number of bushels by which any two varieties or hybrids must differ before that difference can be accepted as real. The statement is placed below the group of entries whose yields do not differ significantly from the yield of the strain which ranked first in the test.

In addition to yields, other factors should be considered before any conclusions are drawn as to whether a variety or hybrid is better in performance than another hybrid or variety.

State College

The season at State College was characterized by the shortage of rainfall during most of the growing period. Sufficient moisture was present at planting to secure good stands. This year, as shown in table 2, seven hybrids yielded significantly better than Mosby. Of these, Tennessee 10 showed the least amount of root-lodging and Louisiana 398A had the least stalk-lodging. Tennessee 10 had the least total lodging and was considerably better than Mosby in root-lodging resistance.

Although Funk's G703 was significantly better yielding than Mosby, it had very little husk protection and had more weevil damage than Mosby at Natchez and Poplarville where weevil damage was heavy enough to be noted. This hybrid had a rather high percentage of broken stalks, which is very undesirable, and died prematurely as a result of disease injury.

Another yellow hybrid which did not yield significantly less than Louisiana 3802 was Texas 8. Its lack of husk coverage, making it susceptible to field infestation by weevil, makes it rather undesirable.

Average yields for the past 4 years, as shown in table 3, indicate that Tennessee 15 has a 10.5 percent increase in yield over the average yield of the check varieties. For the same period Wood's S210, a yellow hybrid, has shown a small increase of 5.2 percent. For the past 3 years, Tennessee 10 and Louisiana 3802 have shown an increase of a little more than 11 percent. Both of these hybrids have comparatively good lodging resistance and should be preferred over Tennessee 15 for that reason.

West Point

The stands at West Point were poor as a result of a dry period following planting. The season was marked by less than an average amount of rainfall. However, yields were better this year

Table 2. Main hybrid corn test, Agricultural Experiment Station, State College, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants lodged		Husk grade	Ear-worm grade
		Bu. per acre	Percent of checks			Root	Stalk		
1	Louisiana 3802	61.6	120.3	96.0	178	15.4	1.5	1.3	2.0
2	Louisiana 389	61.1	119.3	97.2	191	21.3	2.1	1.5	2.0
3	Louisiana 123	61.0	119.1	96.8	192	25.2	2.2	2.2	2.0
4	Louisiana 468	60.1	117.4	99.0	156	37.8	1.4	1.3	2.0
5	Louisiana 398A	59.9	117.0	95.8	175	37.0	1.1	1.3	2.0
6	Funk's G703	59.9	117.0	96.6	183	11.0	9.9	0.6	2.5
7	Tennessee 10	59.2	115.6	97.0	165	9.4	3.6	1.2	2.8
8	Tennessee 15	57.6	112.5	98.1	165	16.8	5.7	1.0	2.3
9	Texas 8	57.0	111.3	96.2	114	17.7	8.4	0.2	3.0
10	Synthetic No. 2	56.9	111.1	95.8	139	28.6	8.6	0.6	2.5
A difference in yields of less than 5.0 bushels per acre between any two entries is not considered significant.									
11	Louisiana 3813	56.3	110.0	97.7	202	15.1	4.6	1.8	2.0
12	Texas 12	55.2	107.8	94.6	122	10.6	14.3	0.2	2.8
13	Funk's G713	54.8	107.0	95.6	137	7.0	11.1	0.8	2.6
14	Wood's S210	53.8	105.0	96.6	151	10.1	9.2	1.0	2.5
15	Missouri 8	53.2	103.9	97.0	114	6.4	9.2	0.2	3.0
16	*Mosby	52.8	103.1	98.3	128	22.4	3.6	1.0	2.1
17	*College 47	51.3	100.2	95.2	125	10.7	5.2	1.0	2.1
18	Texas 14	50.7	99.0	94.8	105	5.9	13.4	0.0	2.8
19	Hastings' Yellow Pro.	50.0	97.6	97.5	175	13.8	6.4	1.0	1.8
20	*Neal Paymaster	49.4	96.4	98.1	113	9.8	3.6	1.0	2.0
21	Yellow Paymaster	48.7	95.1	96.2	119	16.2	3.4	1.2	2.6
22	Wood's S320	46.8	91.4	95.6	134	14.2	3.7	1.8	2.0
23	Florida W-1	40.2	78.5	85.0	157	11.8	1.0	2.8	1.0
24	Florident White	37.9	74.0	96.6	129	10.1	3.8	2.2	1.2
25	Florident Yellow	36.8	71.8	98.3	152	17.5	2.5	2.5	1.3
Average of checks		51.2	100.0						

*Check varieties.

**Planted April 15; harvested October 16.

Table 3. Three- and four-year averages, corn hybrid test, State College.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Tennessee 10	—	71.8	55.5	59.2	62.2	111.5**
2	Louisiana 3802	—	72.0	52.7	61.6	62.1	111.3**
3	Tennessee 15	38.4	73.7	49.4	57.6	54.8	110.5
4	Wood's S210	34.2	68.2	52.7	53.8	52.2	105.2
5	*Mosby	27.7	66.1	56.4	52.8	50.8	102.4
6	*Neal Paymaster	34.2	67.5	46.2	49.4	49.3	99.4
7	*College 47	31.2	60.3	52.2	51.3	48.8	98.4
Average of check varieties		31.0	64.6	51.6	51.2	49.6	100.0

*Check varieties.

**Compared to the three-year average of check varieties.

than in 1941 (tables 4 and 5). Twelve hybrids and varieties yielded approximately the same as the highest yielding entry. None yielded significantly more than check varieties Mosby and Neal Paymaster, and none of the hybrids was ap-

preciably lower than either of those two varieties in percentage of plants root-lodged or broken.

Incomplete data were taken on this test so that not many characteristics of the hybrids could be compared.

This section is the only one where Texas hybrids were among the highest yielding entries. However, other hybrids yielding equally well have better husk protection, which makes them more desirable than the Texas hybrids.

For a 4-year period, Tennessee 15 has a little more than a 13 percent increase in yield over the average yield of the checks. For the past 3 years Tennessee 10 has better than an 8 percent increase in yield. There is little difference in

Table 4. Main hybrid corn test, West Point Experimental Field, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants lodged		Husk grade
		Bu. per acre	Percent of checks			Root	Stalk	
1	Texas 8	56.9	110.4	77.8	Data not taken	10.2	4.4	Data not taken
2	Texas 12	55.3	107.4	75.7		7.3	11.4	
3	Tennessee 10	54.0	104.8	85.1		11.8	2.4	
4	Synthetic No. 2	53.5	103.8	76.4		7.2	6.4	
5	Louisiana 389	53.4	103.6	75.0		8.8	5.1	
6	*Mosby	53.1	103.1	77.8		9.8	8.5	
7	Louisiana 398A	53.0	102.9	75.7		14.6	5.5	
8	Louisiana 3802	52.6	102.1	79.9		13.0	10.4	
9	Louisiana 468	51.6	100.2	77.1		10.4	7.2	
9	Tennessee 15	51.6	100.2	78.5		14.2	5.8	
11	*Neal Paymaster	51.4	99.8	84.4		9.1	7.0	
12	Funk's G703	51.1	99.2	80.2		5.2	13.8	
A difference in yields of less than 5.8 bushels per acre between any two entries is not considered significant.								
13	Texas 14	50.4	97.8	77.4	8.1	8.1		
13	Louisiana 123	50.4	97.8	76.0	18.7	11.4		
15	*College 47	49.9	96.8	84.4	6.6	8.2		
16	Louisiana 3813	49.5	96.1	77.1	13.5	8.6		
17	Hastings' Yellow Pro.	49.2	95.5	82.3	13.1	17.7		
18	Missouri 8	47.8	92.8	76.7	3.6	4.1		
19	Funk's G713	47.5	92.2	80.6	3.4	6.4		
20	Wood's S210	47.4	92.0	77.4	18.4	7.6		
21	Yellow Paymaster	46.1	89.5	81.2	12.4	4.3		
22	Wood's S320	44.8	87.0	74.0	8.9	7.5		
23	Florida W-1	43.8	85.0	56.9	6.1	1.2		
24	Florident White	36.3	70.4	75.3	10.6	4.6		
25	Florident Yellow	33.9	65.8	75.7	6.8	5.5		
Average of checks		51.5	100.0					

*Check varieties.

**Planted April 2; harvested October 10.

Table 5. Three- and four-year averages, corn hybrid test, West Point.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Tennessee 15	17.9	50.8	45.5	51.6	41.4	113.1
2	Tennessee 10	—	49.8	47.1	54.0	50.3	108.2**
3	*College 47	12.8	45.9	46.9	49.9	38.9	106.3
4	Louisiana 3802	—	42.7	48.8	52.6	48.0	103.2**
5	Wood's S210	5.5	46.3	47.9	47.4	36.8	100.5
6	*Neal Paymaster	5.4	45.4	41.1	51.4	35.8	97.8
7	*Mosby	3.1	39.5	44.9	53.1	35.2	96.2
Average of check varieties		7.1	43.6	44.3	51.5	36.6	100.0

*Check varieties.

**Compared to the three-year average of check varieties.

the lodging resistance of these two hybrids at this station, but the difference shown was in favor of Tennessee 10.

Holly Springs

Some hybrids in the test at Holly Springs (table 6) appeared to be definitely superior to open-pollinated varieties. Louisiana 3802 outyielded Mosby, the best open-pollinated variety, by 10.1 bushels; this is twice the amount required for significance. Of the three highest yielding hybrids, Louisiana 3802 and Louisiana 468 would seem to be the best because the percentage of stalk-lodging in Louisiana 398A is considerably higher than in the other two. None of the hybrids was more lodging resistant than any of the check varieties.

Hybrids in the 1942 Holly Springs test showed the greatest increase in yield over the check average of all the tests in the hill section of the State. However, Tennessee hybrids, which might be expected to perform best in this section, were not significantly different in yield from Mosby and Neal Paymaster.

In a comparison of the 3-year averages (table 7) Louisiana 3802 has yielded 18 percent more than the average yield of the checks. For that period Tennessee 10 has yielded only about 13 percent more. For a 4-year average, Tennessee 15 has shown an increase of about 16 percent. When lodging is considered, Louisiana 3802 or Tennessee 10 would

Table 6. Main hybrid corn test, Holly Springs Branch Station, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants lodged		Husk grade***
		Bu. per acre	Percent of checks			Root	Stalk	
1	Louisiana 3802	61.3	128.5	92.7	160		5.6	3.0
2	Louisiana 398A	59.4	124.5	89.6	167		16.6	2.8
3	Louisiana 468	59.0	123.6	84.1	154		7.1	2.5
A difference in yields of less than 4.9 bushels per acre between any two entries is not considered significant.								
4	Louisiana 389	55.8	117.0	91.6	165		7.1	3.0
5	Louisiana 123	55.0	115.3	89.1	161		10.2	2.8
6	Funk's G713	54.2	113.6	92.4	121		6.4	2.0
7	Louisiana 3813	54.1	113.4	93.0	176		9.5	3.0
8	Synthetic No. 2	53.7	112.6	93.8	121		9.2	1.8
9	Texas 8	53.6	112.4	93.4	106		4.2	2.0
10	Tennessee 10	51.2	107.3	92.4	125		5.9	2.0
10	Texas 12	51.2	107.3	89.6	107		7.8	2.0
10	*Mosby	51.2	107.3	95.0	110		3.2	2.3
13	Tennessee 15	50.4	105.6	92.2	119		21.4	2.0
14	*Neal Paymaster	49.8	104.4	87.0	112		4.4	2.0
15	Funk's G703	49.5	103.8	92.7	131		12.6	2.0
16	Hastings' Yellow Pro.	48.3	101.2	89.8	160		13.9	2.8
17	Missouri 8	47.8	100.2	90.6	104		19.0	1.5
17	Texas 14	47.8	100.2	86.7	103		7.2	2.0
19	Wood's S210	47.3	99.2	89.3	128		9.3	2.3
20	Yellow Paymaster	45.2	94.8	87.2	105		6.2	2.0
21	Wood's S520	43.4	91.0	89.0	117		6.7	2.0
22	*College 47	42.2	88.4	94.0	107		2.2	2.0
23	Florident White	40.3	84.4	92.4	129		6.4	2.5
24	Florida W-1	39.6	83.0	68.2	174		3.8	2.8
25	Florident Yellow	35.8	75.0	94.0	128		6.9	3.0
Average of checks		47.7	100.0					

*Check varieties.

**Planted May 8, harvested November 6-9.

***Average of only four replications.

Table 7. Three- and four-year averages, corn hybrid test, Holly Springs.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Louisiana 3802	—	49.0	73.8	61.3	61.4	118.3**
2	Tennessee 15	17.3	62.8	61.4	50.4	48.0	115.7
3	Tennessee 10	—	54.2	70.2	51.2	58.5	112.7**
4	*Neal Paymaster	11.7	49.6	69.2	49.8	45.1	108.7
5	Wood's S210	10.1	51.7	59.2	47.3	42.1	101.4
6	*Mosby	10.5	48.5	58.1	51.2	42.1	101.4
7	*College 47	9.0	40.6	58.2	42.2	37.5	90.4
Average of check varieties		10.4	46.2	61.8	47.7	41.5	100.0

*Check varieties.

**Compared to the three-year average of check varieties.

be a better hybrid than Tennessee 15 at this location.

Raymond

Yields of five hybrids in this test, shown in table 8, were significantly better than Mosby. However, none of these hybrids

was appreciably lower in stalk-lodging or root-lodging and in most cases was higher than Mosby in percentage of root-lodged plants. Funk's G703 was the only yellow hybrid which was significantly better yielding than Mosby. However, it

Table 8. Main hybrid corn test, Raymond Branch Station, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants		Husk grade
		Bu. per acre	Percent of checks			Root lodged	Broken	
1	Funk's G703	64.6	122.8	95.0	173	12.6	36.1	
2	Louisiana 123	64.2	122.1	89.8	205	17.9	22.3	
3	Louisiana 398A	63.2	120.2	94.3	185	12.9	18.7	
4	Louisiana 3802	61.9	117.6	101.6	177	14.6	29.2	
5	Louisiana 468	61.0	116.0	89.1	185	13.1	22.8	
6	Louisiana 3813	58.7	111.6	95.8	207	20.1	24.7	
A difference in yields of less than 6.4 bushels per acre between any two entries is not considered significant.								
7	Tennessee 10	57.3	108.9	95.0	168	7.9	19.1	
8	Tennessee 15	55.8	106.1	93.2	181	15.6	26.2	
9	Synthetic No. 2	54.3	103.2	86.4	173	13.2	28.9	
10	*Mosby	54.2	103.0	89.6	158	14.8	18.3	
10	Louisiana 389	54.2	103.0	93.8	205	13.3	26.3	
12	Funk's G713	53.7	102.1	90.1	158	7.2	28.6	
13	*College 47	53.4	101.5	90.4	141	10.0	19.3	
14	Wood's S210	50.8	96.6	89.3	168	13.1	27.4	
15	Wood's S320	50.5	96.0	86.4	146	17.1	19.5	
16	*Neal Paymaster	50.3	95.6	90.4	139	11.5	27.0	
17	Texas 14	50.0	95.1	91.4	124	8.8	26.7	
18	Florida W-1	49.5	94.1	82.8	182	14.2	15.4	
19	Hastings' Yellow Pro.	49.2	93.5	94.0	193	11.3	27.4	
20	Yellow Paymaster	48.3	91.8	92.2	125	11.2	22.8	
21	Texas 8	47.0	89.4	90.1	127	14.7	23.4	
22	Florident Yellow	45.1	85.7	93.5	146	9.4	22.0	
23	Florident White	44.7	85.0	93.5	137	11.4	17.2	
24	Missouri 8	43.1	81.9	87.5	125	6.8	36.6	
25	Texas 12	42.7	81.2	89.6	134	13.0	30.8	
Average of checks		52.6	100.0					

Data not taken.

*Check varieties.

**Planted May 21; harvested November 2.

had a high percentage of broken stalks which would make it undesirable when compared with other hybrids yielding equally well or when compared with Mosby. Although data on husk extension were not taken here, information on

husk extension gathered at other locations indicates that Funk's G703 has very little husk coverage and is also undesirable for that reason.

Considering all factors, Louisiana 468

Table 9. Three- and four-year averages, corn hybrid test, Raymond Branch Station.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Tennessee 15	42.4	77.6	59.6	55.8	58.8	110.5
2	Tennessee 10	—	71.3	58.1	57.3	62.2	106.7**
3	*College 47	39.6	74.2	50.1	53.4	54.3	102.1
4	*Mosby	35.9	69.8	51.3	54.2	52.8	99.2
5	*Neal Paymaster	37.6	69.9	51.9	50.3	52.4	98.5
6	Louisiana 3802	—	60.3	47.0	61.9	56.4	96.7**
7	Wood's S210	40.6	60.7	50.7	50.8	50.7	95.3
Average of check varieties.....		37.7	71.3	51.1	52.6	53.2	100.0

*Check varieties.

**Compared to the three-year average of check varieties.

Table 10. Main hybrid corn test, Natchez Branch Station, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants lodged		Husk grade	Weevil grade
		Bu. per acre	Percent of checks			Root	Stalk		
2	Louisiana 3802	55.1	122.4	66.6	180	4.6	10.8	1.8	0.5
A difference in yields of less than 5.1 bushels per acre between any two entries is not considered significant.									
3	Louisiana 398A	47.5	105.6	61.2	182	4.3	10.8	2.5	1.0
4	Tennessee 10	47.4	105.3	66.6	160	1.0	4.9	1.6	1.6
4	*College 47	47.4	105.3	76.3	127	0.8	15.5	2.0	1.2
6	Tennessee 15	45.9	102.0	73.4	168	3.6	26.6	2.0	2.5
7	Synthetic No. 2	45.8	101.8	68.2	142	3.5	27.3	1.5	2.2
8	Louisiana 3813	45.7	101.6	60.5	211	8.6	27.2	3.0	0.8
9	Hastings' Yellow Pro.	45.6	101.3	65.6	197	4.6	24.0	2.3	1.0
10	Louisiana 389	45.4	100.9	55.4	182	4.0	11.8	2.5	0.3
11	Louisiana 123	45.2	100.4	50.4	198	5.6	17.8	2.0	0.6
12	*Neal Paymaster	44.9	99.8	60.7	134	6.4	26.0	1.6	2.0
13	Texas 12	44.7	99.3	62.9	135	6.2	25.8	0.5	3.3
14	*Mosby	42.8	95.1	79.2	137	3.3	16.6	1.8	1.3
15	Yellow Paymaster	41.4	92.0	72.4	126	3.6	13.9	1.6	2.2
16	Texas 8	41.2	91.6	68.2	116	4.2	9.3	0.8	2.6
17	Funk's G713	40.7	90.4	55.9	158	2.4	40.4	2.0	2.0
17	Wood's S210	40.7	90.4	56.8	154	4.2	36.6	1.8	1.6
19	Funk's G703	40.2	89.3	64.4	174	5.8	31.0	1.5	2.6
20	Florida W-1	39.5	87.8	37.2	183	1.2	8.2	3.0	0.2
21	Wood's S320	37.6	83.6	58.6	140	2.2	14.6	2.3	0.5
22	Texas 14	36.6	81.3	50.8	119	2.2	18.5	0.5	3.5
23	Florident White	36.1	80.2	70.6	142	0.3	15.2	3.0	0.3
24	Florident Yellow	34.5	76.6	65.6	145	2.6	13.0	2.6	0.8
25	Missouri 8	32.0	71.1	38.2	117	4.0	29.3	0.6	4.0
Av. of check varieties.....		45.0	100.0						

*Check varieties.

**Planted April 7; harvested October 1.

and Louisiana 398A are probably the two best hybrids in this test.

Missouri 8 had the least amount of root-lodging but had the greatest amount of stalk-lodging.

Over a 4-year period, three varieties and two hybrids have been tested at Raymond, as shown in table 9. During this period Tennessee 15 has given an increased yield over the check average of 10.5 percent. Wood's S210 has yielded almost 5 percent less than the check average for the same period. Tennessee 10 and Louisiana 3802 have been on test for the last 3 years. For that period Tennessee 10 has yielded 6.7 percent more than the check average, while Louisiana 3802 has yielded 3.3 percent less.

Natchez

Valuable information was obtained on the performance of hybrids at Natchez, as shown in table 10. Although stands were rather poor, yields were corrected so that those presented would be fairly comparable. Noticeable differences occurred in the amount of stalk breaking, husk extension, and weevil damage. Louisiana 468 and Louisiana 3802 were significantly better yielding than other varieties and hybrids in the test. Louisiana 468 appeared to have more lodging resistance than Louisiana 3802, and also had a longer husk with a correspondingly lower amount of weevil damage. It was also a little less prolific

and would, therefore, have a slightly more desirable ear size. Tennessee 10 had the least amount of stalk-lodging and was also lowest in amount of total lodging. Funk's G713 had the most stalk-lodging.

In the 3- and 4-year summaries (table 11) Tennessee 15 has an increase in yield of 7.3 percent over the average of the checks. This increase is rather small, and when such factors as lodging resistance are considered, it will be found that this hybrid is less desirable than the open-pollinated varieties. Tennessee 10, on the other hand, has a similar increase in yield and has more lodging than the open-pollinated varieties.

Poplarville

Stands were poor at Poplarville but by adjusting yields rather reliable comparisons were obtained. Results are shown in tables 12 and 13.

Of special interest in this test was the performance of the Florida varieties and the hybrid, Florida W-1. This was the most southerly location of the tests, and conditions at Poplarville might be expected to be more similar to those of Florida conditions than at any of the other locations. From the performance of the Florida strains it appears that was the case. Florida W-1, which yielded approximately equal to Mosby at Poplarville, was definitely inferior to the best hybrids at other locations. Florida W-1

Table 11. Three- and four-year averages, corn hybrid tests, Natchez Branch Station.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Tennessee 15	61.9	45.9	69.2	45.9	55.7	107.3
2	Tennessee 10	—	43.9	67.7	47.4	53.0	106.2**
3	Louisiana 3802	—	35.1	65.3	55.1	51.8	103.8**
4	*College 47	62.1	40.4	64.2	47.4	53.5	103.1
5	*Mosby	58.8	42.7	67.3	42.8	52.9	101.9
6	Wood's S210	59.9	41.6	55.0	40.7	49.3	95.0
7	*Neal Paymaster	52.1	35.4	64.4	44.9	49.2	94.8
	Average of check varieties	57.7	39.5	65.3	45.0	51.9	—

*Check varieties.

**Compared to the three-year average of check varieties.

CORN HYBRIDS AND VARIETIES

Table 12. Main hybrid corn test, South Mississippi Branch Station, Poplarville, 1942.**

Rank	Hybrid or variety	Total yield		Percent of perfect stand	Ears per 100 plants	Percent of plants lodged		Husk grade	Weevil grade
		Bu. per acre	Percent of checks			Root	Stalk		
1	Louisiana 3802	37.5	118.3	85.6	214	2.0	3.9	0.7	1.2
2	*Mosby	36.1	113.8	88.3	181	1.2	2.5	1.2	1.5
3	Louisiana 468	34.4	108.5	87.8	192	6.3	3.8	0.9	1.3
4	Florida W-1	34.2	107.8	45.0	212	2.4	1.2	3.0	0.1
5	Hastings' Yellow Pro.	34.1	107.6	77.2	252	3.6	0.7	1.0	2.0
A difference in yields of less than 3.6 bushels per acre between any two entries is not considered significant.									
6	Florident White	33.8	106.6	70.0	210	5.6	0.0	2.0	0.5
7	Louisiana 123	33.5	105.6	78.3	226	11.4	2.8	1.0	1.3
8	Wood's S320	33.2	104.7	75.6	186	6.6	0.0	1.3	1.2
9	Tennessee 15	32.6	102.8	88.9	187	1.8	2.5	0.2	2.7
9	Louisiana 389	32.6	102.8	83.9	220	4.0	1.3	1.3	1.0
11	Louisiana 398A	32.2	101.6	72.2	211	10.8	1.5	1.2	1.0
12	Louisiana 3813	31.7	100.0	66.7	274	10.8	5.0	1.5	0.8
13	*College 47	30.3	95.6	79.4	178	2.8	4.2	0.8	1.8
14	Florident Yellow	30.1	95.0	79.4	197	5.6	0.7	2.3	0.7
15	*Neal Paymaster	28.7	90.5	79.4	153	2.8	2.1	0.5	2.3
15	Tennessee 10	28.7	90.5	82.2	182	1.4	2.0	0.5	2.7
15	Synthetic No. 2	28.7	90.5	83.3	171	6.0	0.6	0.5	2.0
15	Funk's G703	28.7	90.5	86.7	196	1.3	3.2	0.8	2.5
19	Wood's S210	27.6	87.0	73.9	175	2.2	4.5	0.4	2.5
19	Funk's G713	27.6	87.0	77.8	169	0.0	3.6	0.5	1.8
21	Texas 12	27.2	85.8	85.0	158	2.0	1.3	0.0	3.2
22	Yellow Paymaster	25.1	79.2	69.4	152	2.4	1.6	0.7	2.0
23	Texas 8	23.1	72.8	87.8	131	2.5	1.2	0.0	2.5
24	Texas 14	22.3	70.3	80.6	141	2.8	1.4	0.0	3.6
25	Missouri 8	19.3	60.8	66.7	108	0.0	0.8	0.0	3.5
Average of checks.....		31.7	100.0						

*Check varieties.

**Planted May 21; harvested November 2.

Table 13. Three- and four-year averages, corn hybrid tests, Poplarville.

Rank	Hybrid or variety	Yield, bushels per acre				Average	Percent of checks
		1939	1940	1941	1942		
1	Louisiana 3802	—	32.8	39.1	37.5	36.5	113.4**
2	*Mosby	24.5	32.0	38.7	36.1	32.8	107.9
3	Tennessee 15	32.1	29.0	35.5	32.6	32.3	106.2
4	*College 47	26.1	27.3	35.6	30.3	29.8	98.0
5	Tennessee 10	—	29.5	33.1	28.7	30.4	94.4**
6	*Neal Paymaster	23.9	29.3	31.8	28.7	28.4	93.4
7	Wood's S210	24.5	28.5	32.2	27.6	28.2	92.8
Average of check varieties.....		24.8	29.5	35.4	31.7	30.4	100.0

*Check varieties.

**Compared to the three-year average of check varieties.

hybrid has excellent husk coverage and a correspondingly low amount of weevil damage, and is comparatively good in lodging resistance; however, it shows a poor germination so that stands of this

hybrid are usually thin, which is quite undesirable.

Also of special interest in this test was Hastings' Yellow Prolific, which yielded approximately the same as Louisiana

3802, the highest yielding hybrid. However, Hastings' Yellow Prolific has a poor husk coverage and for that reason is probably less desirable than other varieties which yielded equally well. It is the only yellow variety in the high-yielding group, and where a yellow strain of corn is desired this variety well deserves consideration.

The 3-year averages (table 13) show that Louisiana 3802 has an increased yield of 13.4 percent over the average yield of the check varieties. Although this hybrid does not have the excellent husk protection exhibited by Florida W-1, it has a better average yield for the past 2 years in which they have been directly compared. Also, it does not show the susceptibility to seedling diseases that

Florida W-1 does, giving it a better field stand.

Stoneville

Table 14 gives data for 25 hybrids and open-pollinated varieties tested in 1942. The yield in bushels per acre corrected to 15.5 percent moisture, the percent of perfect stand, percent stalk break, bushel test weight, percent weevil bored sound, percent weevil bored damage, percent total weevil bored, percent total damage, and grade, are given.

The column in table 14 under the heading "percent stalk break" gives the percentage of stalks that was broken below the lowest ear on individual plants when harvested. When stalks are broken low enough to allow the ear to lie on the ground, damage by rot may result.

Table 14. Hybrid corn test, Stoneville, 1942.^{1/}

Rank	Variety	Yield ^{2/} (bushels per acre)	Percent of stalk break	Bushel test weight	Percent weevil bored sound	Percent weevil bored damage	Percent damage by rot	Percent total weevil bored	Percent total damage	Grade ^{3/}
1	Louisiana 3802	117.2	17	58	1.5	9.4	—	10.9	9.4	4 White
2	*Mosby	111.5	11	58	1.5	7.3	.5	8.8	7.8	4 White
3	Louisiana 468	111.5	12	59	2.6	—	1.7	2.6	1.7	1 White
4	Louisiana 389	111.2	12	58	2.0	4.6	.5	6.6	5.1	3 White
5	Louisiana 398A	103.0	13	56	.9	16.9	.5	17.8	17.4	Sample
6	*College 47	98.6	15	58	.5	7.9	.3	8.4	8.2	4 White
7	Louisiana 3813	98.4	19	58	—	7.7	1.0	7.7	8.7	4 White
8	Texas 12	97.5	22	57	2.6	7.6	—	10.2	7.6	4 Yellow
9	Louisiana 123	95.6	15	58	.2	5.2	2.4	5.4	7.6	4 White
10	Wood's S210	95.2	21	58	2.8	14.2	2.3	17.0	16.5	Sample
11	*Hastings' Yellow Prolific	93.0	18	61	—	4.0	—	4.0	4.0	2 Yellow
12	*Neal Paymaster	92.8	12	55	3.6	12.3	1.9	15.9	14.2	5 White
13	Tennessee 10	92.4	6	57	5.5	12.3	1.0	17.8	13.3	5 White
14	Tennessee 15	92.3	10	57	2.5	20.7	.8	23.2	21.5	Sample
15	Synthetic No. 2	89.0	14	57	.6	17.7	.4	18.3	18.1	Sample
16	Funk's G703	87.7	14	56	7.9	9.1	.6	17.0	9.7	4 Yellow
17	Texas 8	86.1	9	55	3.2	18.6	.4	21.8	19.0	Sample
18	Funk's G713	85.9	16	59	1.5	9.9	1.6	11.4	11.5	5 Yellow
19	Wood's S320	83.0	21	57	.4	7.6	3.3	8.4	10.9	5 White
20	*Florident White	81.8	16	60	3.6	2.3	.3	5.9	2.6	1 White
21	*Yellow Paymaster	80.1	8	55	—	12.2	1.6	12.2	13.8	5 Yellow
22	Texas 14	77.3	18	53	1.7	30.0	2.8	31.7	32.8	Sample
23	Missouri 8	72.4	5	54	4.1	27.9	1.9	32.0	29.8	Sample
24	*Florident Yellow	69.6	21	57	—	.4	.3	.4	.7	1 Yellow
25	Florida W-1	66.5	9	61	—	1.2	1.2	1.2	2.4	1 White

^{1/}Planted April 2, 1942. Harvested November 10, 1942.

^{2/}A difference in yield of 12.0 bushels between varieties is necessary for significance.

^{3/}Grades were determined in accordance with official United States grain standard (See table 2).

*Open-pollinated varieties.

A very heavy infestation of stored grain insects was present and was an important factor in determining the grades of different varieties. The columns in table 14 under the headings "percent weevil bored damage" and "percent weevil bored sound" were added together to give "percent total weevil bored."

The columns in table 14 under the headings "percent weevil bored damage" and "percent damage by rot" were added together to give "percent total damage." Percent rot damage is the percentage of

kernels that have been injured by disease and rot. The percent total damage was the grading factor that determined the grade of all varieties in the test.

During the years 1938, 1939, 1940, 1941, and 1942 no hybrid has significantly outyielded College White Mosby, an open-pollinated variety. Mosby has also produced corn of high quality, and has consistently outyielded all Corn Belt hybrids. Louisiana 3802, 3813, and 123 made good yields of quality grain in 1941 and 1942.

Table 15. Grading factors used to determine grades of corn.

Grade no.	Minimum test weight per bushel	Minimum limits of			
		Moisture	Cracked corn and foreign material	Damaged kernels	
				Total	Heat damage
	Pounds	Percent	Percent	Percent	Percent
1	54	14.0	2	3	.1
2	53	15.5	3	5	.2
3	51	17.5	4	7	.5
4	48	20.0	5	10	1.0
5	44	23.0	7	15	3.0

Sample grade, as used in this report, includes corn of the class yellow or white which does not come within the requirements of any of the grades from Nos. 1 to 5, inclusive.

Summaries

Yields have been summarized for the tests located in the hill section of the State, and for the State as a whole (table 16). A study of this table will reveal some things of value to corn growers throughout Mississippi.

Florida W-1 shows a definite regional adaptation. Its yield was significantly below that of Mosby at State College, West Point, Holly Springs, and Stoneville; while at Natchez, Raymond, and Poplarville, there was not a significant difference in the yield of the two strains. If more disease-free seed could be produced or obtained this hybrid would have a special place in the southern part of the State, where its husk protection would be of value in protecting it from weevil. Future testing of hybrid combinations of the inbreds in this hybrid crossed with other inbreds may produce a hybrid which

will give a good yield, good stand, and good husk.

The search for a yellow variety adapted to Mississippi has been rather gratifying in the performance of Hastings' Yellow Prolific. At no location, except Stoneville, was the yield of this variety significantly less than the yield of Mosby, which should indicate its rather general adaptation. However, this variety does not have husk extension which offers much protection from weevil. The performance of Yellow Paymaster, while not as good as Hastings' Yellow Prolific, compares rather favorably with the white strain of Paymaster but has a lower yield.

In direct comparison with Mosby, Synthetic No. 2 showed a slightly lower yield but never a significant increase. At Poplarville and Stoneville its yield was significantly below that of Mosby. At most locations the synthetic variety show-

Table 16. Yield summaries of the main hybrid corn tests—seven locations, 1942.

Rank	Hybrid or variety	Hill stations							Delta Stoneville	Averages	
		State College	West Point	Holly Springs	Ray- mond	Nat- chez	Poplar- ville	Six hill stations		All loca- tions	
1	Louisiana 3802	61.6	52.6	61.3	61.9	55.1	37.5	117.2	55.0	63.9	
2	Louisiana 468	60.1	51.6	59.0	61.0	57.0	34.4	111.5	53.8	62.1	
3	Louisiana 398A	59.9	53.0	59.4	63.2	47.5	32.2	103.0	52.5	59.7	
4	Louisiana 389	61.1	53.4	55.8	54.2	45.4	32.6	111.2	50.4	59.1	
5	Louisiana 123	61.0	50.4	55.0	64.2	45.2	33.5	95.6	51.6	57.8	
6	*Mosby	52.8	53.1	51.2	54.2	42.8	36.1	111.5	48.4	57.4	
7	Louisiana 3813	56.3	49.5	54.1	58.7	45.7	31.5	98.4	49.3	56.3	
8	Tennessee 10	59.2	54.0	51.2	57.3	47.4	28.7	92.4	49.6	55.7	
9	Tennessee 15	57.6	51.6	50.4	55.8	45.9	32.6	92.3	48.9	55.2	
10	Synthetic No. 2	56.9	53.5	53.7	54.3	45.8	28.7	89.0	48.6	54.6	
11	Funk's G703	59.9	51.1	49.5	64.6	40.2	28.7	87.7	49.0	54.5	
12	Texas 12	55.2	55.3	51.2	42.7	44.7	27.2	97.5	46.1	53.4	
13	*College 47	51.3	49.9	42.2	53.4	47.4	30.3	98.6	45.8	53.3	
14	Hastings' Yellow Pro.	50.0	49.2	48.3	49.2	45.6	34.1	93.0	46.1	52.8	
15	*Neal Paymaster	49.4	51.4	49.8	50.3	44.9	28.7	92.8	45.8	52.5	
16	Texas 8	57.0	56.9	53.6	47.0	41.2	23.1	86.1	46.4	52.1	
17	Funk's G713	54.8	47.5	54.2	53.7	40.7	27.6	85.9	46.4	52.0	
18	Wood's S210	53.8	47.4	47.3	50.8	40.7	27.6	95.2	44.6	51.8	
19	Wood's S320	46.8	44.8	43.4	50.5	37.6	33.2	83.0	42.7	48.5	
20	Texas 14	50.7	50.4	47.8	50.0	36.6	22.3	77.3	43.0	47.9	
21	Yellow Paymaster	48.7	46.1	45.2	48.3	41.4	25.1	80.1	42.4	47.8	
22	Missouri 8	53.2	47.8	47.8	43.1	32.0	19.3	72.4	40.5	45.1	
23	Florida W-1	40.2	43.8	39.6	49.5	39.5	34.2	66.0	41.1	44.7	
24	Florident White	37.9	36.3	40.3	44.7	36.1	33.8	81.8	38.2	44.4	
25	Florident Yellow	36.8	33.9	35.8	45.1	34.5	30.1	69.6	36.0	40.8	
	Av. of check varieties....	51.2	51.5	47.7	52.6	45.0	31.7	101.0	46.6	54.4	
	Av. of all entries	53.3	49.4	49.9	53.1	43.2	30.1	91.6	46.5	52.9	
	Significant differences ...	5.0	5.8	4.9	6.4	5.1	3.6	12.0	2.1	2.5	

*Check varieties.

ed less lodging resistance than the original variety. This alone indicates the necessity for a study of more than yielding ability if progress is to be made in producing hybrids and varieties superior to those that exist at present.

The performance of the Louisiana hybrids for the hill section of the State was very good. Four of the six hybrids on test were significantly better than Mosby; when the Stoneville test was included only two were significantly better. Louisiana 3802 was significantly better than all hybrids and varieties except Louisiana 468. On a percentage basis, Louisiana 3802 had an increase of 17 percent in yield over the check average for all locations and an increase over Mosby, the

best open-pollinated variety, of over 11 percent.

None of the other hybrids in the test was significantly better yielding than Mosby. The yields of Tennessee 10, Tennessee 15, Louisiana 389, Louisiana 3813, Louisiana 398A, and Louisiana 123 were approximately equal to Mosby. All other hybrids and varieties in the tests were significantly below Mosby in yield. This is true only of the averages for the State as a whole.

The performance of hybrids from the Corn Belt, such as Missouri 8, indicates that these hybrids are not suitable for conditions in Mississippi, not only on the basis of yield but, also, as regards husk protection, lodging resistance, and other factors.