Research Report No. 29
December, 1968

Measured crop performance

Part I Corn Hybrids
Part II Grain Sorghum
Part III Corn and Sorghum Silage
Part IV Soybeans
Part V Cotton

1968

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PERFORMANCE OF CORN HYBRIDS, GRAIN SORGHUM, CORN AND SORGHUM SILAGE, SOYBEANS AND COTTON IN NORTH CAROLINA[1/]

John C. Rice, E. L. Jones, G. C. Oliver and A. R. Adams

Corn, grain sorghum, silage, soybeans and cotton are produced in the same general areas of North Carolina. To make the data on each of these crops easily accessible, the tests results are compiled in one bulletin.

Part I is concerned with corn hybrids in all production areas of the state. Part II deals with grain sorghums, primarily in the Piedmont. Data from these tests would be applicable to most areas of production in North Carolina. Part III covers data on corn and sorghum silage. Interest in these crops for silage is increasing each year. Both crops are used for silage and the choice is dependent on which fits best in the farm operation. Part IV has the data on soybeans, a crop which has been increasing in acreage each year. Part V contains the data on cotton performance and lint characteristics.

Each part is complete in that it contains information on experimental procedure, locations of the tests, a discussion of the data and the data for 1968[2/], as well as summary table for the past two and three years.

1/ The Official Variety Testing Program recognizes the co-operative spirit and civic-minded service rendered by the farmers who have furnished, prepared and cultivated the land for these trials.

The Agricultural workers in their respective areas contribute much to the success of these tests by aiding in the location of test sites, by holding field meetings, and also by their utilization of the information obtained.

2/ Statistical analyses were made in the Statistical Laboratory and Computing Center under the supervision of John O. Rawlings, Frank Verlinden, Joyce Villena and Bill Hawley. This assistance is gratefully acknowledged.

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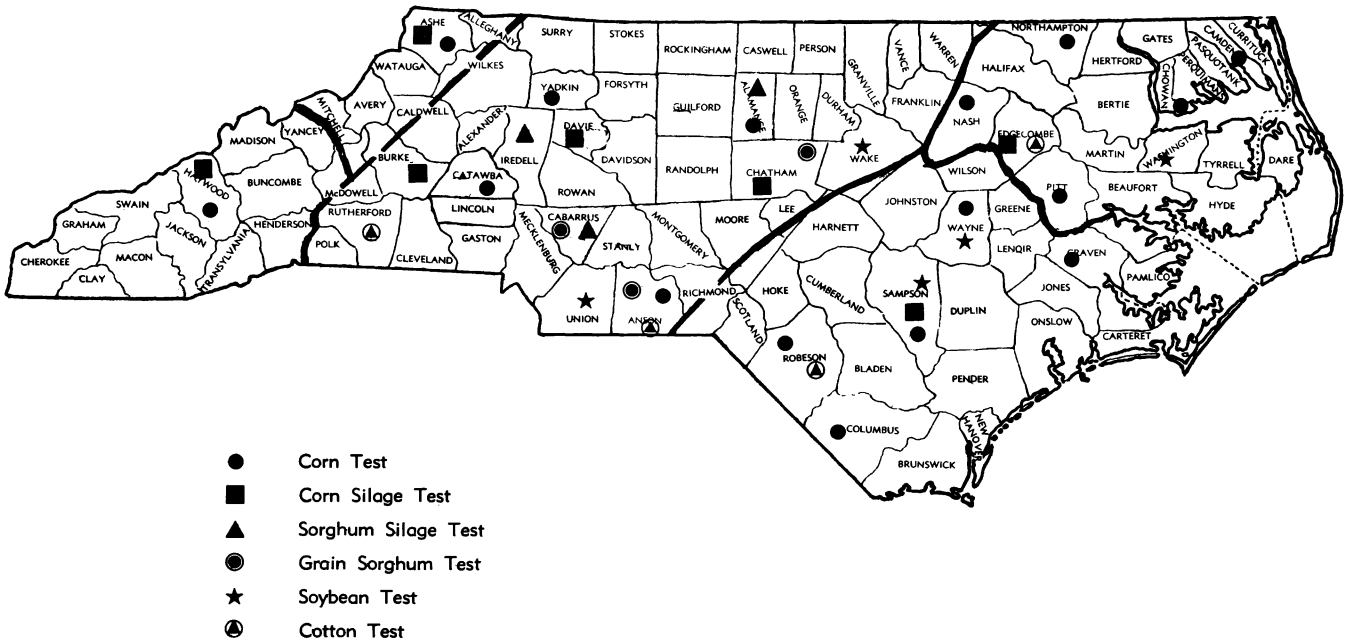
FIGURE 1.— LOCATION OF OFFICIAL VARIETY TEST



It is hoped that the organization of this bulletin will provide data to those interested in the various crops in a complete form which is readily available. The large number of hybrids and varieties available for planting within this state makes it mandatory that information be available to seedsmen, growers and agricultural workers so that easy comparisons can be made.

CO-OPERATORS 1968

Corn

Area I - Northern Mountains

Ashe County, Upper Mountain Research Station, Dana G. Tugman, Superintendent, Laurel Springs, N. C. Extension Chairman, C. E. Gardner and assistants, co-operating.

Area II - Southern Mountains

Haywood County, Mountain Research Station, J. R. Edwards, Superintendent, Waynesville, N. C. Extension Chairman, V. L. Holloway and assistants, co-operating

Area III - Piedmont

Alamance County, Raymond Braxton, Graham, N. C. Extension Chairman G. R. Coble and assistants, co-operating

Anson County, Jack Burr, Route 1, Wadesboro, N. C. Extension Chairman John R. Potter and assistants, co-operating

Catawba County, D. E. Caldwell, Route 2, Newton, N. C. Extension Chairman, J. F. Giles and assistants, co-operating

Yadkin County, Roy Daub, East Bend, N. C. Extension Chairman, R. D. Smith and assistants, co-operating

Area IV - Southern Coastal Plain

Columbus County, Border Belt Research Station, Wallace Dickens, Superintendent, Whiteville, N. C. Extension Chairman, Charlie Raper and assistants, co-operating

Craven County, Rodney Russell, Dover, N. C. Extension Chairman, A. T. Jackson and assistants, co-operating

Robeson County, Varsar Bullard, Route 3, Maxton, N. C. Extension Chairman, W. C. Williford and assistants, co-operating

Sampson County, James Wright Jackson, Dunn, N. C. Extension Chairman Worth Gurkin and assistants, co-operating

Area V - Northern Coastal Plain - Full Season

Nash County, Frank B. Phillips, Jr., Battleboro, N. C. Extension Chairman, J. P. Woodard and assistants, co-operating

Northampton County, J. C. Long, Margarettsville, N. C. Extension Chairman, B. H. Harrell and assistants, co-operating

Pitt County, C. X. James, Bethel, N. C. Extension Chairman, S. C. Winchester and assistants, co-operating

Area V - Northern Coastal Plain - Short Season

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Chowan County, Robert L. Bunch, Route 2, Edenton, N. C. Extension Chairman, C. W. Overman and assistants, co-operating

Wayne County, Kermit Price, Route 4, Mount Olive, N. C. Extension Chairman, G. Mark Goforth, Jr. and assistants, co-operating

Corn Silage

Area I - Northern Mountains

Ashe County, Upper Mountain Research Station, Dana G. Tugman, Superintendent, Laurel Springs, N. C. Extension Chairman, C. E. Gardner and assistants, co-operating

Area II - Southern Mountains

Haywood County, Mountain Research Station, J. R. Edwards, Superintendent, Waynesville, N. C. Extension Chairman, V. L. Holloway and assistants, co-operating

Area III - Piedmont

Chatham County, Horace Mann, Pittsboro, N. C. Extension Chairman, John Cooper and assistants, co-operating

Davie County, C. L. Blake, Route 1, Advance, N. C. Extension Chairman, Leo F. Williams and assistants, co-operating

Burke County, H. O. Beck, Broughton Hospital, Morganton, N. C. Extension Chairman, Herbert M. Speas and assistants, co-operating

Area IV - Coastal Plain

Edgecombe County, Ernest G. Davenport, Route 2, Tarboro, N. C. Extension Chairman, C. H. Lockhart and assistants, co-operating

Sampson County, M. F. Jackson, Route 1, Dunn, N. C. Extension Chairman, Worth Gurkin and assistants, co-operating

Sorghum Silage

Alamance County

W. N. Reid, Route 1, Gibsonville, N. C. Extension Chairman, G. R. Coble and assistants, co-operating

Cabarrus County

Jackson Training School, James L. Query, Farm Manager, Concord, N. C. Extension Chairman, J. Ray Allen and assistants, co-operating

Iredell County

Ralph Gaither, Route 1, Harmony, N. C. Extension Chairman, W. L. Franklin and assistants, co-operating

Grain Sorghum

Anson County

T. A. McRae, Jr., Route 1, Wadesboro, N. C. Extension Chairman, John R. Potter, Jr. and assistants, co-operating

Cabarrus County

Jackson Training School, James L. Query, Farm Manager, Concord, N. C. Extension Chairman, J. Ray Allen and assistants, co-operating

Chatham County

Russell and Eugene Johnston, Route 1, Siler City, N. C. Extension Chairman, John Cooper and assistants, co-operating

Soybeans

Sampson County
Carnet and Howard Boney, Route 1, Clinton, N. C. Extension Chairman Worth Gurkin and assistants, co-operating

Union County
Elbert C. Griffin, Route 7, Monroe, N. C. Extension Chairman, J. A. Marsh and assistants, co-operating

Washington County
J. W. Smith, Plymouth, N. C. Extension Chairman, G. M. Whitford and assistants, co-operating

Wake
Oscar Stephenson, Route 3, Fuquay, N. C. Extension Chairman, G. W. Miller, Jr. and assistants, co-operating

Wayne County
George M. Aycock, Route 2, Pikeville, N. C. Extension Chairman, G. Mark Goforth and assistants, co-operating

Cotton

Anson County
Calvin Phillips, McFarlan, N. C. Extension Chairman, John R. Potter, Jr. and assistants, co-operating

Edgecombe County
Melvin Smiley, Whitaker, N. C. Extension Chairman, Charles H. Lockhart and assistants, co-operating

Robeson County
Varsar Bullard, Route 3, Maxton, N. C. Extension Chairman, W. C. Williford and assistants, co-operating

Rutherford County
Van McDaniels, Ellenboro, N. C. Extension Chairman, John A. Crawford and assistants, co-operating

CORN HYBRIDS

The performance of different corn hybrids in different areas of the state depends on their adaptation to the environmental conditions within the area in which they are to be grown. The performance of varieties in five different areas of North Carolina is reported in this bulletin.

The data provides information on the performance of commercial and experimental hybrids grown in various geographic areas of the state. Information of this nature serves as a guide to corn breeders in the development of hybrids and also provides a guide to agricultural workers and growers in choosing hybrids to plant that will perform well in their respective area.

A top performing hybrid is one that will consistently give high returns to the grower. It must have a good yield and standability as well as other desirable characteristics including adaption to mechanical harvesting. In order to properly evaluate a hybrid for a particular area, data from several locations over a period of years is desirable. However, it is only after a hybrid has been planted under farm conditions that it really received its most thorough evaluation.

Results of the North Carolina Official Corn Trials for the 1968 season are presented in this report. Two and three year summaries are als presented.

EXPERIMENTAL PROCEDURE

Commercial and experimental hybrids developed by public and private agencies are included in this program. One requirement for inclusion is quantitative data from experiments in which the proposed entry is compared with recognized hybrids. These data must reveal meritorious performance order for a hybrid to qualify for the test.

Entering Hybrids

Any individual or firm may make application for having hybrids tested. A fee is charged on an entry per area basis. Personnel of the testing program may also include entries about which further information is desired.

Early in February each year, rules governing the tests for the ensuing year are distributed to all previous participants and to those who make inquiry.

Agencies sponsoring entries in the 1968 tests are shown in Table 1.

Table 1. Name and address of sponsoring agencies in the 1968 North Carolina Corn Performance Trials along with designation used to identify the hybrids in the trials.

Name	Address	Hybrid Designation
Asgrow Seed Company	Atlanta 2, Georgia	Asgrow
Coker Pedigreed Seed Co.	Hartsville, S. C.	Coker
Cotton Hybrid Research, Inc.	Athens, Georgia	CHR, Pennington
Edmund and Son Seed Co.	Chadbourn, N. C.	Edmund
Fla. Agric. Expt. Sta.	Gainesville, Florida	Florida
Frontier Hybrids, Inc.	Scott City, Kansas	Frontier
Green Bros. Seed Co.	Fuquay Varina, N. C.	Green's
Greenwood Seed Co.	Thomasville, Georgia	Greenwood's
McCurdy Seed Co., Inc.	Fremont, Iowa	McCurdy
McNair Seed Co., Inc.	Laurinburg, N. C.	McNair
N. C. Agric. Expt. Sta.	Raleigh, N. C.	N. C.
Northrup King & Co.	Minneapolis, Minn.	NK
Pfister Assoc. Growers, Inc.	Aurora, Illinois	P.A.G.
Pioneer Corn Company, Inc.	Tipton, Indiana	Pioneer

Table 1. Continued.

Name	Address	Hybrid Designation
S. C. Agric. Expt. Sta.	Clemson, S. C.	S. C.
Speight Seed Farms	Winterville, N. C.	Speight
Taylor-Evans Seed Co.	Tulia, Texas	T-E
Todd Hybrid Corn Co.	Mt. Airy, Maryland	Todd
Tomahund Plantation	Williamsburg, Virginia	Hofmeyer's
Virginia Agric. Expt. Sta.	Blacksburg, Virginia	V.P.I.
Wagwood Farms, Inc.	Gibsonville, N. C.	Wagwood
Watson Seed Farms	Rocky Mount, N. C.	Watson

Field-Plot Technique

The state is divided into five geographical areas according to soil type, maturity zone and climatic conditions. The various areas and co-operators are shown in Figure 1. Where feasible, three or more locations with four replications were used in each area. In each of the mountain areas, (Areas I and II) where the acreage of corn is less, one location with six replications was used. Four locations, with four replications each, were used in Area III and Area IV. Area V had three locations with four replications each for full season entries and three locations with four replications each for short season entries.

The practice in the Northern Coastal Plain Area, where short season corns are grown on many farms, is toward planting high populations and fertilizing heavy. The 1968 tests were planted 7 inches in the drill. Soil tests were made and fertilization was applied in accordance with

recommendations. At topdressing time 220 pounds of nitrogen was applied as nitrogen solution on all of the short season tests in Area V.

Depending upon the number of entries, the following experimental designs were used: A 3 x 4 and 4 x 4 triple rectangular lattice, a 6 x 6, 6 x 7 and 5 x 6 simple rectangular lattice, and a randomized complete block. Data were analyzed by locations and combined over locations within an area.

A cone hopper was mounted on a John Deere Planter and the tests were mechanically planted. Fifty percent extra kernels were planted and the plots were thinned to plants 12 inches apart in the row for the Piedmont, 10 inches for all other full season and 7 inches for the short season tests. Row width of the various tests was 38 inches. The plots were two rows wide and 15 feet long with 19 kernels planted per row, except for the short season tests, which had 27 kernels per row and the Piedmont with 16 kernels per row. The alley width was 6 feet which was requireed for mechanical planting and harvesting.

A mixed fertilizer was applied at planting with a fertilizer attachment on the planter and the plots were topdressed with adequate nitrogen to give a medium to high fertility level. Atrazine was the herbicide used on most tests at planting. At layby, 2, 4-D and Lorox or Atrazine were applied to control late grass and broadleaf weeds using nitrogen solution as the carrier. Excellent weed control was obtained in most tests. Cultural practices for each of the tests are shown in Table 2. Planting, collecting data and harvesting were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

A two row picker-sheller was slightly modified for harvesting individual plots. Grain from individual plots was caught as it came from the elevator and weighed. The combine was stopped at the end of each plot for a short interval of time in order for the machine to clean out between plots prior to weighing the corn from the plot. The machine appeared to give very satisfactory results. A sample of corn was taken from each plot for moisture determination. A picker-sheller was used to more nearly simulate the conditions under which these corns would be harvested on farms. The only corn harvested was that which came through the picker-sheller. If the machine failed to pick up a stalk due to lodging, this corn was not harvested. The tests in Areas I and II were harvested by hand.

Seasonal Conditions

The 1968 growing season in North Carolina was generally unfavorable for the production of corn with the state average yield decreasing from a high of 79 bushels per acre in 1967 to 59 bushels per acre in 1968. Good moisture conditions existed at most locations at planting time and a good stand was obtained at all locations. The season was generally favorable for early planted corn but extremely unfavorable for late planted acreages and full season hybrids. A dry September added to the prolonged heat wave and dry soils that prevailed during August seriously damaged late corn.

The Ashe County Test was planted in bottom land and a good stand was obtained but soon destroyed by birds. It was replanted but the delayed planting resulted in frost damage before the corn matured.

Table 2. Cultural practices used on the corn test. 1968

Area And Co-operator	Fertilizer lbs/A and Grade		Herbicide[1/] Preemergence	Top-dressing lbs/A of N. and Source	Row Spacing Inches	Date of Planting	Date of Harvest
Area I							
Upper Mt. Res. Sta.	400 10-20-20	Drilled	Atrazine	168	38"	June 6	Test Discarded
Dana G. Tugman	150 8-8-8	In Row		Ammonium Nitrate			
Area II							
Lower Mt. Res. Sta.	400 5-10-10	Drilled	Atrazine	201	38"	May 20	November 26
J. R. Edwards				Ammonium Nitrate			
Area III							
Raymond Braxton	800 10-20-20	Drilled	Atrazine	175	38"	April 19	September 30
Alamance County				Nitrogen Solution			
Jack Burr	500 10-10-10	Drilled	Atrazine	175	38"	May 2	September 18
Anson County	300 10-20-20	In Row		Nitrogen Solution			
D. E. Caldwell	500 5-10-10	Drilled	Atrazine	175	38"	April 16	September 19
Catawba County	125 10-20-20	In Row		Nitrogen Solution			
Roy Daub	800 2-6-12	Drilled	Atrazine	175	38"	April 19	September 26
Yadkin County	125 10-20-20	In Row		Nitrogen Solution			
Area IV							
Wallace Dickens	500 5-10-10	Drilled	Atrazine	175	38"	April 1	September 4
Columbus County	100 10-20-20	In Row		Nitrogen Solution			
Rodney Russell	500 5-10-10	Drilled	Atrazine	175	38"	March 29	August 30
Craven County	100 10-20-20	In Row		Nitrogen Solution			
Varsar Bullard	100 10-20-20	Drilled	Atrazine	175	38"	March 27	September 14
Robeson County				Nitrogen Solution			
James W. Jackson	600 5-10-10	Drilled	Atrazine	175	38"	March 26	Test Discarded
Sampson County	100 10-20-20	In Row		Nitrogen Solution			
Area V - Full							
Frank B. Phillips	1000 3-9-18	Drilled	Atrazine	175	38"	April 18	September 3
Nash County	125 5-10-10	In Row		Nitrogen Solution			
J. C. Long	600 5-10-10	Drilled	Atrazine	175	38"	April 18	September 23
Northampton County	125 10-20-20	In Row		Nitrogen Solution			
C. X. James	600 10-20-20	In Row	Atrazine	175	38"	April 3	September 3
Pitt County				Nitrogen Solution			
Area V - Short							
Tully R. Tarkington	850 5-10-10	Drilled	Atrazine		38"	April 26	Test Discarded
Camden County	100 10-20-20	In Row					
Kermit Price	500 5-10-10	Drilled	Atrazine	220	38"	March 28	Test Discarded
Wayne County	100 5-10-10	In Row		Nitrogen Solution			
Robert L. Bunch	100 10-20-20	In Row	Atrazine	220	38"	April 9	August 30
Chowan County				Nitrogen Solution			

[1/] Topdressed with Nitrogen Solution and 1/3 lb. active 2, 4-D acid-wetting agent/A (14 fl. oz. of Weedone 638). When needed 0.62 lb. active Linuron/A (1½ lb. Lorox 50 WP) or 1 lb. active Atrazine/A (1½ lb. Atrazine 80 WP) was used at layby to control grass or weeds.

The Haywood County Test was also planted on bottom land and a normal stand was obtained and good growing conditions existed throughout the season. Some reduction in yield was evident at certain spots in the test due to excess moisture. However, this test was considered to have fair yields.

In the Piedmont Area all of the four county tests had good moisture at the beginning of the growing season and average yields were recorded at these locations. Good stands were obtained at all locations. Alamance, Anson, Catawba and Yadkin County Tests suffered during the growing season from lack of moisture and the yields were reduced accordingly. It appeared that the later maturing hybrids were more seriously affected than the earlier varieties.

In the Southern Coastal Plain Area the Columbus, Craven and Robeson County locations had good stands and fair growing conditions throughout the growing season with below average yields recorded at each location. The Sampson County Test was not used due to an extreme dry weather condition resulting in no ears being formed on stalks.

Only fair growing conditions existed in the Northern Coastal Plain for both the full season and short season tests. Good stands were obtained at all locations and fair to good yields were also reported. The Camden County Test was destroyed by birds soon after it was planted. This test was replanted and again destroyed by birds.

Data

Data were collected on each plot location on yield, stand, moisture, lodging, ear height, ears per 100 stalks, exposed ear tips and quality. Statistical analyses were made on each of the above listed characters for individual locations and combined over locations within an area. The C.V. and L.S.D.'s are listed at the bottom of the various columns of the 1968 tables. Variety x locations mean squares were used to compute the L.S.D.'s. Comparisons of hybrids should be made only within areas and not between areas since soil and climatic conditions differ so greatly.

The percentage data presented in this report were not transformed and the L.S.D. and C.V. values listed are for the untransformed data. This resulted in the C.V.'s and L.S.D.'s being rather high for percent lodged and percent ear tips exposed.

Stand and Yield Adjustments

All plots having less than a 70 percent stand were adjusted to 70 percent of the maximum stand for statistical analysis. Any plot having a stand of 70 percent or above was not adjusted.

Yield adjustments were made by determining the average yield per plant of the particular variety in unadjusted plots and multiplying this value by the adjusted number of plants.

Yield

Weight of shelled corn was obtained by harvesting and weighing each plot and each entry at each location. Any location harvested by hand was weighed for ear corn and converted to shelled corn basis. All plot yields were adjusted to 15.5 percent moisture.

Stand

Stand percent was determined by counting the number of plants per plot and dividing by 32 for the normal population tests in the Piedmont, 38 for all other full season tests and 54 for the high population tests.

Moisture at Harvest

Moisture content of grain at harvest is an index of maturity. Moisture percentage was determined from samples obtained from each plot at each location even where the tests were harvested by hand. Samples were obtained by taking a sample from each plot immediately after the grain was weighed. The samples were placed in water-proof plastic-coated paper bags and analysed shortly thereafter on an official moisture meter.

Lodging

Lodging is a term used to describe stalks that are broken, leaning or fallen to the ground. All plants broken below the ear or leaning more than 45 degrees are considered lodged. Data were taken on each plot and a lodging percent calculated.

Ear Height

Ear height was determined by measuring the distance from the ground to the node where the ear is attached to the stalk.

Ears Per 100 Stalks

The number of ears per 100 stalks is a measure of prolificness and indicates whether a hybrid tends to be a single-ear or prolific type. Ears per plot were counted in each replication at every location prior to harvest. Ears per plot divided by plants per plot give the number of ears per plant. This figure multiplied by 100 gives the number of ears per 100 stalks. A fallacy in this method is that the count is made without shucking the corn out so some undeveloped ears may be counted.

Exposed Ear Tips

The number of exposed ear tips were counted in each plot. This number divided by the total number of ears per plot gives percent exposed tips.

Quality

Quality readings are based primarily on ear rot damage. The following scale was used to determine rating:

Rating	Damage per Plot
1	0 - 10
2	11 - 20
3	21 - 30
4	31 - 40
5	41 - 50

The data were taken on each plot on the shelled corn, except where the tests were hand harvested; then it was taken on the ears.

Diseases

The reaction of hybrids to the major corn diseases (including the common leaf blights) is evaluated yearly. It is difficult to make adequate comparisons of hybrids over a period of successive years due to the fact that all hybrids are severely damaged during years of severe disease development. Preliminary observations indicate little difference in reaction of hybrids to the common leaf blight present in the Coastal Plain Area.

Four locations in the Piedmont were planted in counties which reported corn stunt mosaic in previous years. These tests were evaluated and the data are being compiled and distributed by the extension service.

Insect Damage

Weevils and other stored grain insects often cause kernel damage to ears of corn before they are harvested. The tests included in this report were all harvested relatively early; therefore, stored insect damage was negligible. Where it occurred, quality was reduced.

RESULTS

Data are presented by areas for three year, two year and one year performance. Hybrids are divided into four groups in the tables, commercial yellow and white, and experimental yellow and white hybrids.

There are numerous corn hybrids available to farmers for planting. These hybrids differ in yield, maturity, lodging, disease and insect resistance, grain quality and other factors. Hybrids that our outstanding in one or more characteristics may be inferior in others and should, therefore, be selected on the basis of overall performance.

Hybrids tested more than one year have a more accurate estimate of their general performance since they have been tested under more diverse environments. Growers should select a top performing hybrid for planting. A top performer is not necessarily the highest yielder, but it should have a high yield, mature within the desired time, stand upright at harvest, and also be reasonably good in other agronomic characteristics. All hybrids yielding above the mean of the test would be considered reasonably good performers.

The 1968 tests for all areas represented only fair growing conditions especially for the moisture problem in the Piedmont Area. The performance should be representative of the hybrids under these conditions

Comparisons can be made directly in these summary tables. Hybrids with a low percent of lodging in these tests would be considered to have a good root system and strong stalk.

Short season corn is early maturing and is usually sufficiently dry to be harvested and marketed inlate August and early September. This type supplies an early (August and September) market demand, and the production of it has been limited primarily to the northeastern counties. One short season location was planted in Wayne County but dry weather seriously damaged this test. The short season corn is primarily grown for early market. The keeping quality of the short season hybrids is usually inferior, and unless the grower exercises extra precautions, the quality and feed value are likely to deteriorate rapidly from insect damage. Short season hybrids are usually less suitable for storing on the farm because of this rapid deterioration.

For general farm storing and feeding, full season corn is more likely to preserve its quality and usually is damaged less by insects. Full season corn requires from two to three weeks longer than short season hybrids to reach maturity and to become sufficiently dry to harvest and store. Usually, full season corn is dry enough to be harvested and stored in late September.

Table 3. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Three Year Average - 1966, 1967, 1968

Average of 3 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	115	90	25.49	3	47	127	22	2.7
Pioneer 3369	109	90	20.78	7	44	117	22	1.9
McNair X202	105	86	25.84	4	50	109	7	1.9
McCurdy 49 x 3	104	86	21.24	14	48	133	21	3.1
V.P.I. 648	104	88	26.07	8	51	121	38	2.6
*Mean of Test	101	88	25.26	8	50	122	21	2.6

*Mean represents all entries for three years.

Table 4. Comparison of Hybrids for Certain Characteristics

Piedmont - Area III

Three-Year Average - 1966, 1967, 1968

Average of 10 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 309B	74	97	22.75	6	44	119	2	1.7
Pioneer 3048	72	95	24.55	5	48	116	3	1.9
McNair 440V	72	96	24.09	3	46	123	4	1.4
McCurdy M306	71	95	23.93	8	55	135	0	1.7
Coker 52	71	95	23.31	3	45	123	2	1.5
Pennington 9-P-3A	69	92	24.27	10	54	120	3	1.8
Dixie 82	69	93	23.66	11	57	121	3	1.7
McCurdy M97	69	96	22.23	8	47	107	7	1.9
Mean of Test	66	95	22.93	7	47	112	9	2.0
N.C. 27	65	94	23.38	10	53	115	2	1.7
McNair 340V	65	96	23.59	6	44	110	10	1.7
N.C. 270	62	93	26.24	7	52	106	2	1.7
Wagwood 200	54	93	23.64	8	44	101	3	1.8
			White Entries					
Dixie 29	69	92	23.58	10	50	119	4	1.7
Pennington CHR-W	67	94	24.11	5	49	117	2	1.9
Coker 911	65	95	24.18	7	51	126	2	1.8
			Experimental Hybrids Yellow Entries					
NC 6019	75	97	23.92	5	48	112	2	1.4

Table 5. Comparison of Hybrids for Certain Characteristics

Southern Coastal Plain - Area IV

Three Year Average - 1966, 1967, 1968

Average of 9 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
McNair 440V	114	97	20.56	6	44	138	3	1.7
Pennington 7-C-11A	102	95	21.98	7	53	127	2	1.6
Edmund 1	101	95	20.68	11	42	118	1	2.1
Florida 200A	100	97	22.07	7	53	125	1	1.7
Dixie 18	98	93	22.07	12	57	128	2	1.6
S.C. 236	97	94	21.46	6	49	121	1	1.8
P-A-G 751	97	94	21.16	9	47	131	1	1.8
Coker 71	95	96	21.77	3	47	129	2	1.8
Coker 52	94	97	21.00	5	41	124	2	1.8
McCurdy M307	93	95	22.39	8	51	118	1	1.9
Mean of Test	93	95	21.30	11	45	118	5	2.0
Coker 74	92	97	22.97	3	45	125	2	1.8
N.C. 270	91	95	22.96	10	49	107	2	2.1
McCurdy M306	91	92	21.99	11	51	127	2	2.2
Dixie 82	90	95	21.28	16	52	119	3	2.2
McNair 340V	88	97	20.68	7	40	111	11	1.8
			White Entries					
Coker 911	99	96	21.43	7	48	122	4	1.8
Pioneer 511A	92	94	19.97	18	42	120	4	2.1
Dixie 29	87	90	20.54	15	44	125	3	2.2
			Experimental Hybrids Yellow Entries					
NC 1057	101	95	22.14	5	47	123	5	2.1

Table 6. Comparison of Hybrids for Certain Characteristics

Northern Coastal Plain - Area V

Three Year Average - Full Season - 1966, 1967, 1968

Average of 9 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Coker 52	99	99	24.75	3	43	120	3	1.8
Pioneer 309B	98	98	24.11	8	44	117	6	1.9
McNair 440V	98	99	25.75	7	48	125	4	1.6
Pioneer 3048	96	97	26.10	10	50	112	3	1.9
McCurdy M303	96	98	26.49	17	56	134	2	2.1
McCurdy M306	96	96	25.32	9	57	120	2	2.3
P-A-G 751	94	97	26.70	11	52	120	2	1.7
N.C. 270	93	98	27.35	9	52	106	2	2.1
Mean of Test	93	97	25.12	9	49	113	6	2.0
McNair 340V	92	98	25.16	5	46	105	11	1.9
Dixie 82	91	96	26.12	17	58	114	2	2.0
S.C. 236	89	96	26.46	7	53	112	0	1.8
			White Entries					
Coker 911	99	98	25.40	9	52	126	3	1.9
Dixie 29	86	93	23.89	12	49	109	4	2.3

Table 7. Comparison of Hybrids for Certain Characteristics

Northern Coastal Plain - Area V

Three Year Average - Short Season - 1966, 1967, 1968

Average of 6 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	108	98	23.38	8	39	95	14	1.8
McCurdy M97	108	97	24.81	17	42	96	7	1.9
P-A-G SX29	101	95	23.39	7	36	93	21	1.9
Watson 430	96	96	25.22	4	39	91	7	2.4
Mean of Test	95	95	23.92	10	37	93	14	2.2
Hofmeyer H-55	90	94	23.63	9	38	90	16	2.5
Watson 401A	85	93	25.74	9	39	89	10	2.3
V.P.I. 648	80	95	24.90	13	39	87	25	2.1
Todd M-55	80	95	22.26	9	35	95	9	1.9

Table 8. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Two Year Average - 1967, 1968

Average of 2 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3369	104	88	18.99	2	42	120	18	2.0
Pioneer 3306	103	88	25.30	2	46	128	14	3.0
McCurdy	92	88	23.42	4	52	128	9	3.3
V.P.I. 648	91	84	25.48	3	49	120	26	2.8
McNair X202	90	84	25.08	2	48	103	6	2.0
McCurdy 49 x 3	89	84	19.80	6	45	132	15	3.5
*Mean of Test	89	84	24.30	2	48	120	14	2.8

*Mean represents all entries for three years.

Table 9. Comparison of hybrids for certain characteristics

Piedmont - Area III

Two-Year Average - 1967, 1968

Average of 8 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 309B	80	99	21.88	8	42	119	2	1.7
Pioneer 3048	78	98	23.24	7	46	113	2	1.8
Coker 52	77	98	22.74	4	43	122	1	1.4
McNair 440V	76	98	23.36	4	44	122	3	1.4
McNair 340V	72	100	22.78	8	42	110	8	1.6
McCurdy M97	72	99	21.40	10	44	105	5	1.8
N.C. 27	71	98	22.68	9	51	111	1	1.6
Dixie 82	70	98	23.73	11	54	110	2	1.7
Pennington 9-P-3A	70	94	24.03	10	50	112	2	1.6
Mean of Test	70	98	22.24	8	44	108	6	2.0
McCurdy M306	68	98	23.57	10	52	116	0	1.9
N.C. 270	67	96	25.63	8	50	100	0	1.6
Frontier 520A	66	100	20.95	11	42	103	18	2.4
Wagwood 306	64	94	22.14	7	41	109	2	1.8
S.C. 236	64	96	23.67	4	51	104	0	1.5
Wagwood 200	62	99	23.12	10	42	102	2	1.7
			White Entries					
Coker 912	74	98	21.46	8	46	128	3	2.0
Dixie 29	73	96	22.68	12	47	114	4	2.0
Pennington CHR-W	68	94	23.61	6	45	112	2	2.0
Frontier SXW	68	98	21.66	3	38	102	10	2.2
Coker 911	67	98	23.88	8	48	116	2	1.8
			Experimental Hybrids Yellow Entries					
NC 6019	80	98	23.43	4	46	108	1	1.4
NC 1057	72	98	23.66	2	46	107	3	1.8

Table 10. Comparison of Hybrids for certain characteristics

Southern Coastal Plain - Area IV

Two-Year Average - 1967, 1968

Average of 6 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
McNair 440V	119	96	21.84	8	44	134	4	1.6
Pennington 7-C-11A	112	96	23.46	9	54	121	2	1.5
Edmund 1	111	96	21.86	8	42	116	2	2.0
Florida 200A	108	96	23.71	8	53	124	2	1.6
Dixie 18	106	92	23.10	13	56	130	2	1.6
S.C. 236	106	94	22.48	7	49	119	1	1.6
P-A-G 751	106	96	22.32	9	48	126	2	1.7
Coker 71	103	98	23.28	2	48	126	2	1.6
Mean of Test	101	95	22.68	9	46	116	4	1.8
N.C. 270	100	94	24.48	10	49	108	2	2.1
Coker 52	100	97	22.52	4	42	122	2	1.8
Dixie 82	99	95	22.50	14	52	117	4	2.1
Coker 74	98	98	24.50	3	45	122	2	1.7
McCurdy M307	98	95	23.98	8	50	112	2	1.8
McCurdy M306	96	92	23.34	12	50	122	2	2.2
McNair 340V	94	96	21.50	6	40	110	10	1.6
			White Entries					
Coker 911	108	96	22.89	6	48	123	4	1.7
Pioneer 511A	99	95	21.23	12	42	114	4	1.8
Dixie 29	97	90	21.85	12	44	124	3	2.1
			Experimental Hybrids Yellow Entries					
NC 1057	109	94	23.62	6	47	120	6	2.2
T-E 6703	106	94	22.52	12	52	117	3	1.6
T-E 6704	106	94	23.42	8	54	120	0	1.4

Table 11. Comparison of Hybrids for Certain Characteristics

Northern Coastal Plain - Area V

Two-Year Average - Full Season - 1967, 1968

Average of 6 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Coker 52	116	98	25.31	4	42	128	2	1.7
Pioneer 309B	114	98	23.84	12	44	124	4	1.6
McNair 440V	112	98	26.50	10	48	132	3	1.4
P-A-G 751	111	99	26.70	16	54	126	2	1.6
McCurdy M306	110	96	25.26	14	58	126	2	2.2
Pioneer 3048	110	98	26.05	16	52	114	2	1.8
McCurdy M303	109	98	26.62	24	58	142	2	2.0
N.C. 270	109	98	27.88	12	52	110	2	2.0
Mean of Test	108	98	25.49	12	50	119	4	1.8
Dixie 82	106	97	26.50	25	58	122	2	1.9
McNair 340V	106	98	25.17	7	46	109	6	1.6
S.C. 236	105	95	26.92	10	54	118	0	1.6
Speight D-14	102	98	25.48	14	46	113	2	1.8
			White Entries					
Coker 911	114	99	26.08	12	52	130	3	1.8
Dixie 29	102	96	23.77	17	50	112	4	2.3
			Experimental Hybrids Yellow Entries					
NC 6019	116	100	26.08	8	49	112	2	1.4
NC 1057	112	98	27.20	13	51	116	4	1.9
T-E 6703	109	97	25.86	21	59	124	2	1.6
T-E 6704	98	92	26.81	11	60	118	1	1.6

Table 12. Comparison of Hybrids for Certain Characteristics

Northern Coastal Plain - Area V

Two-Year Average - Short Season - 1967, 1968

Average of 4 Locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	118	98	24.06	6	38	94	14	1.7
McCurdy M97	116	98	25.76	12	40	95	6	2.0
P-A-G SX99	114	96	26.56	9	36	93	6	1.8
Watson 199	111	96	28.08	6	40	90	8	2.3
Pioneer 3369	111	98	23.12	3	34	96	15	2.3
P-A-G SX29	110	95	24.06	7	34	92	11	1.8
Asgrow ASC 112	107	98	25.86	4	38	89	8	2.0
Watson 430	104	97	26.20	4	38	90	6	2.3
Mean of Test	104	96	24.70	9	36	92	12	2.0
Hofmeyer SX40	102	98	23.19	7	30	94	12	2.0
Hofmeyer H-55	98	92	24.54	8	36	90	14	2.2
Watson 401A	97	96	26.28	10	38	89	10	2.2
V.P.I. 648	90	96	25.71	14	38	88	20	2.0
Todd M-55	86	98	22.29	6	33	92	9	1.6

Table 13. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Haywood County - 1968

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	115	80	22.77	1	47	118	19	2.7
Pioneer 3369	104	78	18.23	1	44	141	24	2.0
McCurdy 67 x 53	101	72	26.03	2	48	133	13	2.7
McCurdy 66 x 18	98	80	23.23	4	51	90	15	3.3
NK PX674	97	82	21.67	1	40	102	19	2.7
McNair X202	95	71	23.30	0	46	104	11	1.7
V.P.I. 648	94	73	24.10	0	48	112	31	3.0
Pioneer 3369A	93	68	20.99	1	43	122	20	1.7
Mean of Test	91	73	22.62	1	46	119	19	2.8
Pioneer 3280	88	71	21.27	4	44	121	24	3.7
McCurdy 49 x 3	85	70	19.69	5	47	124	21	3.7
*Coker X20	84	80	26.07	0	52	116	9	3.0
McNair S140	81	72	19.93	1	44	129	25	4.0
NK PX616	80	64	19.69	2	44	154	13	2.7
NK PX72	76	66	24.36	0	44	99	32	3.7
*Coker S24	73	68	28.03	0	52	127	16	2.0
L.S.D. (.05)	21	15	1.67	4	4	49	16	.7
(.01)	27	19	2.19	6	5	65	20	1.0
C.V. (%)	21	18	7	305	8	35	69	23

*Experimentals.

Table 14. Comparison of hybrids for certain characteristics

Piedmont - Area III

Alamance, Anson, Yadkin and Catawba Counties - 1968

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
Pioneer 3369A	85	100	16.15	5	37	99	11	2.9
Pioneer 3048	82	100	19.26	9	43	107	4	1.9
Pioneer 309B	81	100	18.23	9	39	112	1	1.7
Coker 52	78	100	18.99	4	39	111	1	1.6
McCurdy M306	77	100	20.16	11	48	104	0	1.9
Pioneer 3185	77	98	19.73	3	40	99	2	1.5
Pennington 9-P-3A	76	100	21.22	10	43	101	2	1.9
McCurdy M97	75	99	18.29	8	42	103	5	2.1
McNair 440V	75	100	19.79	5	42	105	3	1.4
Dixie 82	74	100	20.79	17	51	100	1	2.0
N. C. 27	73	100	20.40	11	49	102	1	2.1
Mean of Test	73	100	19.01	8	41	101	6	2.2
N. C. 270	72	98	22.54	10	48	92	0	1.7
S. C. 236	72	100	20.76	4	49	99	0	1.6
Pioneer 309C	72	100	18.63	9	39	103	8	2.0
McNair 340V	71	100	19.70	10	39	100	11	1.9
Wagwood 306	70	99	18.73	9	39	105	3	1.9
Frontier 520A	69	100	16.90	15	37	96	18	2.4
Wagwood 200	66	100	19.75	13	39	94	1	1.9
P-A-G SX99	65	100	18.65	4	37	94	12	1.8
Greens 300A	64	100	17.08	8	38	92	23	3.3
Greens 440	64	100	17.24	8	37	95	13	3.6
Todd 92B	61	100	16.60	1	32	94	8	2.6
Greens 211	60	100	16.45	8	35	93	22	3.2
Frontier S1X	54	100	16.85	5	37	92	16	4.0
White Entries								
Dixie 29	77	100	19.29	17	44	102	4	2.9
Pennington CHR-W	75	97	18.57	8	39	114	1	2.9
Coker 912	74	99	17.58	11	43	116	3	2.8
Coker 911	71	100	20.56	6	44	108	3	2.3
Frontier SXW	69	100	18.62	4	35	99	14	3.0
Iredell V. T.	56	100	19.13	27	48	79	2	2.7
Experimental Hybrids								
Yellow Entries								
NC 8019	84	100	19.72	5	41	106	3	1.6
NC 6035	82	100	20.27	6	43	101	3	1.8
NC 6019	82	99	20.35	6	42	106	0	1.5
Coker S48	81	98	18.34	10	39	110	3	2.2
Coker X20	80	100	16.80	2	39	98	5	2.6
McNair 6801	78	100	20.97	5	46	115	3	1.8
NC 1057	75	100	20.03	2	44	98	3	2.1
NC 3207	75	97	18.65	5	40	100	21	2.4
NC 3392A	74	100	19.98	4	40	94	1	1.7
Coker S24	73	100	17.64	1	39	102	8	2.9
McNair 6501	69	100	18.89	5	47	107	3	1.4
S. C. 236A	69	100	20.06	2	47	95	0	1.6
L.S.D. (.05)	10	N.S.	1.43	7	2	11	6	.5
(.01)	14	N.S.	1.89	10	3	15	8	.6
C.V. (%)	10	2	5	69	4	8	74	16

Table 15. Comparison of hybrids for certain characteristics

Southern Coastal Plain - Area IV

Craven, Columbus and Robeson Counties - 1968

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
McNair 440V	94	94	19.52	7	42	110	6	1.8
Pioneer 3123	90	95	23.95	3	42	102	1	3.0
Pennington 7-C-11A	88	97	21.36	11	50	93	3	1.8
Florida 200A	85	96	21.94	10	49	103	2	1.8
S. C. 236	84	96	20.30	10	46	102	2	1.8
McCurdy 66 x 33	84	93	21.39	20	47	105	4	2.0
Dixie 18	82	91	20.97	13	50	111	5	1.7
Pioneer 309C	82	96	18.16	9	40	104	5	1.9
McNair 340V	81	95	19.17	6	39	99	8	1.8
Edmund 1	81	94	20.28	8	40	100	2	2.4
Mean of Test	81	95	21.00	8	43	101	4	2.1
Dixie 82	80	96	20.88	10	48	98	5	2.4
Coker 71	80	97	21.65	2	44	98	2	1.7
P-A-G 751	80	95	21.01	8	45	105	2	1.9
Coker 52	79	96	20.29	5	41	106	2	2.3
Coker 74	78	98	22.60	2	44	101	1	1.9
Pioneer 3135	74	95	23.66	3	40	95	3	2.9
McCurdy M306	74	94	21.85	12	45	101	3	2.3
McCurdy M307	74	96	22.74	9	44	94	2	2.0
Asgrow ATC 450	70	93	21.69	11	43	99	3	1.9
N. C. 270	70	93	22.97	7	45	96	2	2.6
Greens 300A	64	94	18.49	8	35	96	18	2.9
White Entries								
Dixie 29	84	92	20.05	11	43	114	3	2.8
Coker 911	83	96	21.24	5	46	110	5	2.0
Pioneer 511A	78	95	19.48	8	40	96	5	2.5
Experimental Hybrids								
Yellow Entries								
McNair 6801	98	97	21.04	5	42	103	10	1.6
McNair 6501	94	95	20.84	17	45	106	9	1.7
Coker S48	91	98	18.99	8	39	99	5	1.7
T-E 6703	90	95	20.93	19	47	107	4	1.6
NC 6019	88	97	19.84	6	42	98	2	2.1
NC 1057	84	92	21.40	6	44	104	4	2.5
Greenwood 45	82	96	20.38	4	41	106	4	1.4
S. C. 236A	82	94	21.33	6	45	99	2	1.9
Greenwood 7267	81	96	20.58	3	42	105	1	1.7
NC 7018	78	96	21.06	7	40	95	5	2.0
T-E 6704	75	92	22.13	9	48	97	1	1.7
NC 5032	71	94	21.95	5	39	83	3	2.2
L.S.D. (.05)	13	N.S.	1.31	6	4	15	4	.6
(.01)	18	N.S.	1.75	8	5	20	5	.8
C.V. (%)	12	3	4	56	6	11	74	20

Table 16. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V - Full Season

Pitt, Nash and Northampton Counties - 1968

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Coker 52	126	100	23.40	2	40	127	1	2.4
McCurdy M306	119	100	22.77	6	56	115	2	2.8
Pioneer 309B	117	100	21.09	6	42	111	5	2.1
McCurdy M303	114	100	24.38	15	56	128	1	2.8
Pioneer 3048	113	100	24.39	8	52	104	3	2.2
P-A-G SX99	112	100	21.45	2	40	99	4	2.2
Mean of Test	112	100	23.40	8	49	109	4	2.3
Watson 401A	110	100	20.54	4	41	99	8	2.6
Speight D-14	110	100	22.69	7	46	106	3	2.4
Dixie 82	109	100	24.92	20	56	108	2	2.6
McNair 340V	109	100	24.19	3	48	102	6	2.1
Watson 199	108	100	22.16	1	42	97	6	2.7
N. C. 270	108	100	25.89	13	52	100	2	2.8
S. C. 236	108	99	25.19	8	52	106	0	2.0
McNair 440V	108	100	24.51	7	46	120	3	1.8
P-A-G 751	106	100	24.99	12	52	109	2	1.8
Watson 430	106	100	20.78	2	42	101	8	2.7
Todd 92B	96	98	18.85	2	35	97	12	2.3
			White Entries					
Coker 911	117	100	24.08	8	52	122	4	2.5
Dixie 29	108	100	21.68	11	48	96	4	3.3
			Experimental Hybrids Yellow Entries					
McNair 6801	131	100	24.63	6	51	128	4	2.3
McNair 6501	121	100	24.84	10	52	116	4	1.7
NC 7014	120	100	24.84	11	48	117	5	2.6
Coker S48	118	100	21.31	4	43	111	8	2.4
T-E 6703	117	100	23.93	19	58	119	2	2.0
SC 236A	115	100	24.67	4	53	114	1	1.8
NC 6019	114	100	23.98	7	48	106	3	1.8
NC 7417	114	100	25.24	8	50	103	2	2.5
NC 1057	113	100	25.20	6	50	106	4	2.6
NC 3207	109	94	20.79	6	44	100	16	2.6
T-E 6704	98	100	24.67	7	60	103	0	1.9
L.S.D. (.05)	14	2	1.36	6	4	12	5	.8
(.01)	19	3	1.81	8	6	17	6	1.1
C.V. (%)	12	3	6	68	9	11	100	26

Table 17. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V - Short Season

Chowan County - 1968

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3369A	126	100	17.62	6	37	96	22	2.2
Asgrow A204	121	100	20.31	7	42	80	10	2.8
McCurdy M97	116	100	21.40	8	40	91	9	2.5
P-A-G SX99	111	100	21.52	3	35	88	8	2.0
Pioneer 3306	109	100	18.72	6	37	86	23	2.0
Pioneer 3369	108	100	17.90	3	36	88	19	2.5
P-A-G SX29	108	98	19.31	4	33	86	15	1.8
Watson 199	102	100	24.70	1	40	80	9	2.8
P-A-G SX52	101	100	15.80	5	26	86	21	2.8
Hofmeyer SX40	100	100	18.97	5	32	88	13	2.0
NK PX 72	98	100	19.41	3	34	82	17	2.2
Mean of Test	98	99	19.93	4	36	83	18	2.2
NK PX674	97	100	19.88	8	35	80	30	2.5
Watson 430	96	100	22.27	3	38	78	9	2.8
Asgrow ASC112	95	100	22.09	0	37	81	13	2.0
NK PX616	94	100	18.86	0	37	81	16	2.2
McNair S140	88	100	18.76	9	34	82	17	2.0
Todd M55	86	100	16.93	2	32	86	13	1.0
P-A-G SX31	86	94	17.02	6	30	82	31	2.2
Wagwood 400	85	100	20.14	4	38	72	18	1.5
Hofmeyer H-55	84	92	20.19	2	36	78	22	2.2
Hofmeyer 3X40	81	100	18.64	4	28	80	19	2.5
Todd 92A	78	100	19.37	3	36	74	12	2.0
V.P.I. 648	76	100	21.30	3	38	77	29	2.0
Watson 401A	74	95	21.50	5	39	80	14	2.5
			Experimental Hybrids Yellow Entries					
Coker X20	121	100	21.80	0	38	88	28	2.2
McNair 6839	102	100	22.51	10	34	85	45	2.0
Coker S24	102	100	21.15	2	38	80	16	2.0
L.S.D. (.05)	17	5	1.84	5	3	8	13	.8
(.01)	22	6	2.42	7	4	11	16	1.1
C.V. (%)	12	4	7	86	6	7	47	27

GRAIN SORGHUM

Most of the grain sorghum in North Carolina is grown in the Piedmont where it is used primarily for feed purposes. In the Piedmont Area it is generally produced as a single crop for the season, while in the Coastal Plain Area it is frequently grown as a second crop following small grains. In 1968 all tests were conducted in the Piedmont Area.

The data presented in this report provide information on the performance of commercial varieties, hybrids, and experimental lines grown in various geographical areas of the state and under different cropping systems. Information of this nature serves as a guide to sorghum breeders in their development of varieties and to growers in choosing a variety to plant.

This report presents the results of the North Carolina Official Sorghum Variety Trials for the 1968 season and summarizes the results of tests conducted during the past two and three years.

EXPERIMENTAL PROCEDURE

In this program are included experimental lines, hybrids and varieties developed by public and private agencies. Any individual or firm may make applications for having entries included. Quantitative data from experiments in which the proposed entry is compared with recognized hybrids and varieties must show merit for the entry and must accompany the application. A fee is charged on an entry basis. Personnel of the testing program may include entries about which further information is desired.

Agencies Sponsoring Entries		Designation
Arkansas Agricultural Expt. Sta.	Fayetteville, Arkansas	AKS
Asgrow Seed Company	Atlanta, Georgia	Jumbo L, Asgrow
DeKalb Agric. Association, Inc.	Lubbock, Texas	DeKalb
Georgia Agric. Expt. Sta.	Experiment, Georgia	Georgia
McNair Seed Company	Plainview, Texas	McNair
Northrup, King and Company	Atmore, Alabama	NK, Savanna
Pioneer Corn Company, Inc.	Tipton, Indiana	Pioneer
Taylor-Evans Seed Company	Tulia, Texas	T-E
Todd Hybrid Sales, Inc.	Abbottstown, Pa.	Grain Harvest

Test Locations

Three locations were used in 1968 in the Piedmont as shown in Figure 1. Two tests were located on private farms and one on state institutional property. All were considered to be good grain sorghum tests for the 1968 season.

Seasonal Conditions

The 1968 growing season was generally fair for the production of grain sorghum. Good stands were obtained at the Anson, Chatham and Cabarrus locations.

Grain sorghum production in North Carolina for 1968 was down 10 percent from 1967 yields. The yield per acre is estimated at 45 bushels per acre, five bushels below the record yield of 50 bushels per acre in 1967.

Cultural Practices

Cultural practices, such as soil preparation, date of planting, fertilization and topdressing were in accord with good management and were the same

for all entries at a location, Table 18. Planting and harvesting were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

Experiments were harvested with a modified combine. The grain was caught as it came from the elevator of the combine and was weighed at the end of each plot on scales mounted on the combine. Moisture samples were taken in waterproof plastic paper bags and the percent moisture determined by an official moisture meter.

Data

A randomized block design was used with four replications at each locations. Plot size was two rows 27 feet long. The row width was 38 inches in each test.

Yield. The plots were harvested individually and the average grain yield was calculated in pounds per acre.

Moisture. A moisture percentage was taken and yields were adjusted to 14 percent moisture.

Plant Height. The average height of plants in each plot was taken and an average for each entry was calculated.

Head Exsertion. The distance in inches from the top leaf to the base of the head was measured and referred to as head exsertion. This distance gives an indication of the ease with which grain sorghum may be harvested without leaves and plant material hindering the operation.

Days to Flower. The average number of days from planting to flowering was determined.

Table 18. Cultural practices on grain sorghum performance trials. Piedmont. 1968.

Area and Co-operator	Fertilizer lbs/A and Grade			Herbicide[1/] Preemergence	Top-dressing lbs/A of N. and Source	Row Spacing Inches	Date of Planting	Date of Harvest
Anson County Boyce Winfield	400 200	10-10-10 8-8-8	Drilled In Row	Propazine	175 Nitrogen Solution	38"	May 2	August 27
Chatham County Russell and Eugene Johnston	1000	10-10-10	Drilled	Propazine	175 Nitrogen Solution	38"	April 19	August 28
Cabarrus County James L. Query	450 125	5-10-10 10-20-20	Drilled In Row	Propazine	175 Nitrogen Solution	38"	April 16	August 27

[1/] All tests were topdressed with Nitrogen solution and 1 pint/A of 2, 4-D (14 fl. oz. of Weedone 638) at layby for late weed control.

Head Compactness. A description of head type was determined according to the following scale:

1. Compact type head
3. Average between compact and loose type
5. Loose type head

Results

The data presented in Tables 19, 20 and 21 are summaries for various years and locations and indicate how varieties have been performing in different environments. A three-year average performance for the Piedmont is shown in Table 19. Entries ranged in yield from 5336 for DeKalb F-61 to 3550 pounds per acre for Martin.

The performance of entries during the last two years in the Piedmont is shown in Table 20. Yields ranged from a high of 5366 pounds per acre for DeKalb F-61 to 3366 for Martin.

A summary of the 1968 results for the Piedmont is shown in Table 21. Yields ranged from 5518 pounds per acre for DeKalb F-61 to 3319 for Martin. Eleven of the twenty entries yielded above the mean of the test which is indicative of their good performance. All data should be studied in evaluating varieties and hybrids. The data from these tests are probably representative of the performance of these hybrids since the tests were generally good and the season was generally favorable for the production of grain sorghum. However, data for more than one year should be utilized in determining the performance of hybrids.

Table 21. Performance of grain sorghum for certain characteristics - Piedmont. Chatham, Cabarrus and Anson Counties - 1968

Entry	Yield Lbs/A	Moisture %	Days to Flower	Plant Height Inches	Head Exsertion Inches	Head Compactness
DeKalb F-61	5518	18.28	85	51	7	1.7
DeKalb BR-64	5141	18.06	87	56	7	2.9
McNair 652	5086	17.36	82	51	7	2.2
Pioneer 828	4814	18.79	88	57	7	1.0
Pioneer 820	4727	18.75	87	49	6	1.2
Asgrow Double TX	4706	18.65	87	52	5	1.1
NK 222G	4705	17.31	84	44	5	2.0
NK Savana	4619	16.25	76	48	7	3.0
AKS 614	4594	16.73	78	49	6	3.0
Arkansas 653	4588	16.05	84	44	5	1.9
DeKalb DD-50	4587	15.52	80	43	5	1.8
Mean of Test	4468	17.22	83	48	6	1.9
DeKalb F-65	4379	18.11	86	44	6	1.0
McNair 546	4295	16.45	81	46	5	2.9
Ga. 615	4288	17.60	82	55	6	2.9
Pioneer 866	4274	17.91	81	52	6	1.0
Bird-A-Boo	4254	15.75	78	43	5	2.9
NK 280	3983	16.78	85	49	7	1.2
Asgrow Flare	3914	16.87	87	48	7	2.2
Grain Harvest 42	3573	16.62	84	42	6	1.2
Martin	3319	16.66	86	44	6	1.0
L.S.D. (.05)	1012	1.19	3	3	1	.2
(.01)	1329	1.56	4	4	2	.3
C.V. (%)	14	6	1	6	26	16

CORN AND SORGHUM SILAGE

Silage is an important part of the beef and dairy cattle industry in North Carolina. The trend is toward greater utilization of silage in feed programs. It is desirable to know the performance and feed value of different corn and sorghum hybrids so as to ascertain their general use in the various areas of the state.

The data presented in this report provide information on the performance of commercial hybrids and experimentals grown in various Coastal, Piedmont and Mountain Areas of the state. Information of this nature serves as a guide to breeders in their development of hybrids for silage and to growers in choosing a hybrid to plant for silage production.

This report presents the results of the North Carolina Official Corn and Sorghum Silage Trials for the 1968 season.

EXPERIMENTAL PROCEDURE

In this program are included corn and sorghum hybrids and experimentals developed by public and private agencies. Any individual or firm may make application for having entries included. A fee is charged on an entry basis. Personnel of the testing program may include entries about which further information is desired.

Agencies Sponsoring Entries		Designation
Arkansas Agricultural Expt. Sta.	Fayetteville, Ark.	Leafmaster 43 (Sorghum)
Coker Pedigreed Seed Company	Hartsville, S. C.	Coker (Corn)
Cotton Hybrid Research, Inc.	Madison, Georgia	Summergrazer (Sorghum)
DeKalb Agricultural Assoc., Inc.	DeKalb, Illinois	DeKalb (Sorghum)
Fla. Foundation Seed Producers	Univ. of Fla.	Fla. 200A (Corn)

Excel Sorghum Company	Plainview, Texas	Silo Fill 33 (Sorghum)
Green Bros. Seed Company	Fuquay Varina, N. C.	Green's (Corn)
Georgia Expt. Sta.	Experiment, Georgia	Ga. (Sorghum)
McNair Seed Company	Laurinburg, N. C.	McNair (Corn)
N. C. Agric. Expt. Sta.	Raleigh, N. C.	N. C. Sart, Sugar Drip (Corn & Sorghum)
Northrup, King and Company	Lubbock, Texas	NK (Sorghum)
Pioneer Corn Company, Inc.	Tipton, Indiana	Pioneer (Corn & Sorghum)
S. C. Agric. Expt. Sta.	Clemson, S. C.	S. C. (Corn)
Taylor-Evans Seed Company	Tulia, Texas	T-E (Sorghum)
Va. Polytechnic Institute	Blacksburg, Va.	V.P.I. (Corn)
Wagwood Farms, Inc.	Gibsonville, N. C.	Wagwood (Corn)

Test Locations

Seven locations were used for corn silage--one in each of the Mountain Areas, three in the Piedmont and two in the Coastal Plain. Three locations were used for sorghum silage in the Piedmont as shown in Figure 1. Two of the sorghum tests, two of the Piedmont tests and two Coastal Plain tests of corn silage were on private farms, whereas the two Mountain tests and a Piedmont corn and sorghum silage test were on state institutional farms.

Cultural Practices

Cultural practices, such as seed bed preparation, date of planting, fertilization, cultivation and harvesting were in accord with good farming practices and were the same for all entries in a given test, Table 22. Planting, harvesting and sampling were directly supervised by personnel of the North Carolina Experiment Station. All tests were cut with an ensilage cutter modified for plot work. Moisture and chemical samples were taken at time of harvest by means of modified chute adapted on the rear of the ensilage cutter.

Table 22. Cultural practices used on the corn and sorghum silage performance trials. 1968

Area and Co-operator	Fertilizer lbs/A and Grade			Herbicide[1/] Preemergence	Top-dressing lbs/A of N. and Source	Row Spacing Inches	Date of Planting	Date of Harvest
				Corn Silage				
Ashe County Dana G. Tugman	400 150	10-20-20 8-8-8	Drilled In Row	Atrazine	168 Ammonium Nitrate	38"	June 6	October 2
Haywood County J. R. Edwards	400	5-10-10		Atrazine	201 Ammonium Nitrate	38"	May 20	September 24
Burke County H. O. Beck	500 125	5-10-10 10-20-20	Drilled In Row	Atrazine	175 Nitrogen Solution	38"	April 16	August 29
Davie County C. L. Blake	500 700	0-9-27 10-10-10	Drilled In Row	Atrazine	134 Ammonium Nitrate	38"	May 8	September 3
Chatham County Horace Mann	600	10-20-20	In Row	Atrazine	175 Nitrogen Solution	38"	April 22	August 20
Edgecombe County Ernest Davenport	600	10-20-20	In Row	Atrazine	175 Nitrogen Solution	38"	April 3	August 9
Sampson County M. F. Jackson	600 100	5-10-10 10-20-20	Drilled Row	Atrazine	175 Nitrogen Solution	38"	March 26	Test Discarded
				Sorghum Silage				
Alamance County W. N. Reid	400 400	0-25-25 10-20-20	Drilled In Row	Propazine	175 Nitrogen Solution	38"	April 19	August 19
Iredell County Ralph Gaither	150 450	8-8-8 8-12-12	In Row Drilled	Propazine	175 Nitrogen Solution	38"	May 24	September 25
Cabarrus County James L. Query	450 125	5-10-10 10-20-20	Drilled In Row	Propazine	175 Nitrogen Solution	38"	April 16	August 20

[1/] Topdressed with Nitrogen Solution and 1/3 lb. active 2, 4-D (14 fl. oz. of weedone 638) in both corn and sorghum silage tests. When needed 0.62 lb. active Linuron/A (1¼ lb. Lorox 50 WP) or 1 lb. active Atrazine/A (1¼ lb. Atrazine 80 WP) was used at layby to control grass in the corn test.

Seasonal Conditions

The growing season was generally fair for the production of good yields of corn and sorghum silage at most locations. Good stands were obtained at all locations in both the corn and sorghum silage tests.

The sorghum test located in the Piedmont had fair growing conditions during the growing season with good growth and yields recorded.

In the northern mountains test at Laurel Springs, the test was planted on June 6. The mean yield of the test was approximately the same as for 1967.

The Haywood County Test has a poor stand due to cold, damp soil in the seedling stage. In the Piedmont, the Alamance County Test was damaged by birds. The other two locations at Cabarrus and Iredell Counties had fairly good growth. The Coastal Plain Test had a good stand and good moisture during the growing season with good yields at harvest.

Criteria for Evaluating Silage Entries

A randomized block design with four replications was used for each test. The plots consisted of one row 25 feet long. Spacing within the row was approximately 8 inches for corn and 2 inches for sorghum. Row widths are shown in Table 22.

Yield of Silage. The silage was cut, chopped and weighed by plots in the field and the data converted to an acre basis. Yield of green weight was adjusted to 65 % moisture.

Moisture Percent. Approximately 10% of each plot was obtained for the moisture and chemical analysis sample. The sample was dried in a forced air oven to determine moisture. The dried samples were subsampled and ground through a hammer mill; subsampled again and ground in a Wiley Mill. The ground sample

was analyzed for crude protein and crude fiber.[3/]

Dry Weight Tons/A. The green weight of silage was multiplied by the percent dry matter (corrected).

Total Digestible Nutrients Percent. The formula TDN % = 79.40 - (0.69 x CF) was used to calculate the TDN on a dry basis.

Estimated Net Energy Percent. The formula ENE % = 75.97 - (0.96 x CF). ENE on a dry basis was used.

Crude Protein % and Crude Fiber %. These were determined from the chemical sample and reported on a dry basis.

Digestible Protein. The formula DP - (0.93 x CP) - 3.32 was used to calculate digestible protein on a dry basis.

Plant Height. Height of plants was measured in inches.

Days to Mid Bloom. When each sorghum hybrid was in mid bloom the data was recorded and the number of days to mid bloom was calculated.

Ear Height. Height of ears in the corn tests was measured in inches.

Stand Count. Plants were counted and a stand count % was calculated for the corn silage. A visual stand count was made on sorghum silage and reported as % stand.

Lodging %. Number of plants lodged was counted and a % lodged was calculated on the corn silage. An objective % lodged was taken on sorghum silage.

RESULTS

Corn Silage and Sorghum Silage

The corn silage data are presented by areas in Table 31 through 34. The data in Table 23 through 26 are summaries over a three-year period for

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[3/] The chemical analyses were made under the direction of Drs. J. W. Gillam and Preston H. Reid of the Soils Department, N. C. State University.

the corn silage. These data show the performance of hybrids under several environments and would be considered most useful in evaluating the performance of a hybrid. Some of the hybrids that were highest in tons of dry matter produced per acre were lowest in percent total digestible nutrients and estimated net energy. The data should be considered from the amount of feed value produced per acre.

The sorghum silage, conducted in the Piedmont for 1966, 1967 and 1968 shows yield and other characteristics for a three-year average. A comparison of the feeding value of sorghum silage versus corn silage can be obtained by observing the recorded data.

Table 23. Performance of corn silage - Northern Mountains - Area I. Ashe County - Three year average 1966-1967-1968. Average of 3 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
*NC 3207	17.8	75.0	6.3	8.5	4.6	26.0	61.4	51.0	60	128	97	0
McNair X202	15.2	71.8	5.3	8.0	4.1	24.1	62.8	52.9	52	113	94	0
Mean of Test	14.5	74.8	5.0	8.8	4.9	25.6	61.7	51.4	57	121	92	1
N. C. 27	13.2	78.8	4.6	9.0	5.1	28.2	60.0	48.9	65	129	93	0
V.P.I. 648	12.8	73.2	4.5	8.9	4.8	23.8	63.0	53.2	55	120	89	0

Table 24. Performance of corn silage - Southern Mountains - Area II. Haywood County - Three year average 1966-1967-1968. Average of 3 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
N. C. 270	22.5	77.1	7.9	8.3	4.4	25.3	61.9	51.7	68	139	86	0
McNair 425	20.7	76.7	7.2	7.6	3.8	25.4	61.9	51.6	65	132	84	0
McNair 440V	19.3	77.2	6.7	8.9	5.0	25.4	61.9	51.6	61	126	84	0
Mean of Test	18.6	77.0	6.5	8.4	4.5	25.1	62.1	51.8	61	129	83	0
N. C. 27	16.3	78.4	5.7	8.7	4.7	27.2	60.7	49.9	68	136	77	0

[1/] Corrected to a standard 65% moisture.
* Experimentals.

Table 25. Performance of corn silage Piedmont - Area III. Three Year Average - 1966-1967-1968. Average of 7 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Pioneer 3009	15.7	71.0	5.5	8.8	4.8	25.3	62.0	51.7	53	112	92	3
Dixie 82	15.6	69.2	5.5	9.4	5.4	25.0	62.2	52.0	60	117	89	5
N. C. 270	15.5	73.4	5.4	9.4	5.4	24.9	62.2	52.0	56	116	93	5
McNair 440V	15.4	70.3	5.4	9.3	5.3	23.0	63.5	53.9	51	105	90	5
Pioneer 3048	14.9	71.4	5.2	9.0	5.1	24.0	62.8	52.9	54	111	91	3
Coker 52	14.9	70.2	5.2	9.6	5.6	24.4	62.5	52.5	49	103	95	4
Mean of Test	14.3	70.4	5.0	9.3	5.3	23.7	63.0	53.2	52	108	90	5
N. C. 27	13.9	72.6	4.8	8.7	4.8	24.4	62.5	52.5	57	114	93	7
McNair 425	13.6	72.4	4.8	9.8	5.8	22.8	63.7	54.1	52	106	90	5
Dixie 29 (w)	12.8	68.6	4.5	9.0	5.1	22.5	63.9	54.4	53	110	80	10
Wagwood 200	12.7	70.8	4.5	9.3	5.3	23.4	59.9	53.5	48	106	88	7

Table Performance of corn silage - Southern Coastal Plains - Area IV. Three Year Average - 1966-1967-1968. Average of 4 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Florida 200A	15.8	72.7	5.5	9.1	5.1	26.1	61.3	50.9	60	116	97	6
Dixie 18	15.7	61.0	5.5	9.1	5.1	24.8	62.3	52.2	61	115	96	8
N. C. 270	15.0	72.2	5.3	9.3	5.3	24.9	62.3	52.1	55	115	97	6
S. C. 236	14.5	70.3	5.1	9.1	5.2	25.6	61.7	51.4	55	111	96	4
Pioneer 3009	14.4	69.3	5.1	8.7	4.8	24.6	62.4	52.4	51	111	95	2
McNair 440V	14.4	70.3	5.1	9.7	5.7	25.4	61.8	51.6	50	102	98	3
Mean of Test	14.2	70.4	5.0	9.3	5.3	24.7	62.4	52.3	53	108	95	5
Dixie 82	14.0	70.1	4.9	9.0	5.0	25.1	62.1	51.9	58	115	94	9
Pioneer 3048	13.8	69.9	4.8	9.7	5.7	24.7	62.3	52.2	55	109	96	5
Coker 911 (w)	13.6	72.7	4.8	9.9	5.9	24.7	62.4	52.3	52	104	97	3
McNair 425	13.5	71.2	4.7	9.2	5.3	22.9	63.7	54.1	54	106	96	4
Coker 52	13.4	69.8	4.7	10.3	6.3	22.5	63.9	54.4	45	98	96	3

[1/] Corrected to a standard 65% moisture.

* Experimentals.

Table 27. Performance of corn silage - Northern Mountains - Area I. Ashe County - Two Year Average 1967-1968. Average of 2 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
*NC 3207	14.8	76.5	5.2	8.9	5.0	27.8	60.2	49.4	60	126	96	0
McNair X202	12.4	73.0	4.4	8.7	4.8	25.4	62.0	51.7	49	110	92	0
Pioneer 3196	12.0	74.8	4.2	9.2	5.3	29.0	59.4	48.1	52	114	97	45
N. C. 27	12.0	80.5	4.2	9.8	5.8	30.4	58.5	46.8	65	130	94	0
Mean of Test	11.9	76.2	4.2	9.2	5.3	27.7	60.3	49.4	55	118	92	1
V.P.I. 648	11.0	74.0	3.8	9.5	5.4	24.9	62.2	52.1	54	117	88	0

Table 28. Performance of corn silage - Southern Mountains - Area II. Haywood County - Two Year Average 1967-1968. Average of 2 Locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
N. C. 270	21.6	77.7	7.6	8.6	4.6	26.8	60.9	50.2	70	140	80	0
McNair 440V	17.9	77.8	6.2	9.0	5.0	26.4	61.2	50.6	60	124	76	0
McNair 425	17.7	77.3	6.2	7.6	3.8	26.6	61.0	50.4	66	130	76	0
*NC 3207	17.4	76.8	6.1	8.4	4.4	27.4	60.5	49.6	58	130	74	1
Mean of Test	17.2	77.4	6.0	8.4	4.6	26.7	61.0	50.3	60	128	77	0
N. C. 27	16.2	78.3	5.6	8.8	4.8	29.4	59.2	48.0	69	134	73	0

[1/] Corrected to a standard 65% moisture.
* Experimental.

Table 29. Performance of corn silage - Piedmont Area III. Two Year Average - 1967-1968. Average of 5 Locations.

Entries	Green Wt. Tons/A[1]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Dixie 82	17.2	66.0	6.0	9.6	5.6	25.0	62.2	52.0	60	120	92	7
N. C. 270	16.0	72.7	5.6	9.4	5.4	25.6	61.7	51.3	56	116	96	7
*NC 1057	15.9	72.6	5.6	9.0	5.1	25.6	61.8	51.5	52	106	96	6
Coker 912 (w)	15.0	68.4	5.2	9.5	5.6	22.7	63.8	54.2	52	110	94	6
McNair 440V	15.0	68.4	5.2	9.0	5.1	23.6	63.1	53.4	50	105	88	8
Pioneer 3009	14.8	70.2	5.2	9.1	5.1	26.0	61.4	51.0	52	112	91	4
Coker 52	14.7	69.2	5.2	9.7	5.7	25.8	61.6	51.2	49	106	96	6
Pioneer 3048	14.7	69.8	5.2	8.8	5.0	25.0	62.1	51.9	54	113	92	5
Mean of Test	14.6	68.8	5.1	9.2	5.2	24.2	62.7	52.8	52	110	91	8
N. C. 27	14.4	71.2	5.0	8.4	4.5	24.4	62.6	52.6	57	116	96	11
McNair 425	13.8	71.0	4.8	9.6	5.6	22.6	63.9	54.4	52	108	92	7
Dixie 29 (w)	13.1	66.8	4.6	9.0	5.1	22.4	63.9	54.4	54	112	84	16
*NC 3207	12.6	65.4	4.4	9.0	5.0	22.1	64.2	54.8	50	110	76	6
Wagwood 200	12.5	69.6	4.4	9.2	5.2	24.2	57.7	52.8	47	107	95	11

Table 30. Performance of corn silage - Coastal Plain - Area IV. Two Year Average - 1967-1968. Average of 3 Locations.

Entries	Green Wt. Tons/A[1]	Dry Moisture %	Crude Matter Tons/A	Digestible Protein %	Crude Protein %	Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Dixie 18	18.5	68.4	6.4	8.8	4.8	25.3	62.0	51.7	64	119	98	12
Florida 200A	18.0	70.5	6.3	9.0	5.0	26.1	61.4	50.9	62	120	98	10
S. C. 236	17.2	67.6	6.0	8.8	4.8	25.4	61.9	51.6	58	118	96	6
N. C. 270	16.6	71.0	5.8	9.2	5.3	25.0	62.2	52.0	56	118	97	9
McNair 440V	16.6	68.3	5.8	9.5	5.5	25.4	61.9	51.6	52	106	98	4
*NC 1057	16.6	70.2	5.8	9.1	5.2	27.2	60.6	49.9	54	106	96	7
Pioneer 3009	16.4	67.0	5.8	8.6	4.7	25.0	62.2	52.0	53	114	97	2
Mean of Test	16.2	68.6	5.6	9.1	5.1	25.0	62.2	52.0	56	112	96	8
Dixie 82	16.0	67.6	5.6	8.6	4.7	24.4	62.6	52.6	59	118	96	14
Coker 911 (w)	15.8	70.2	5.6	9.6	5.6	24.2	62.7	52.8	55	108	97	4
Pioneer 3048	15.3	68.3	5.4	9.6	5.6	24.9	62.2	52.0	56	111	96	7
McNair 425	15.0	69.3	5.2	9.0	5.0	23.4	63.3	53.5	56	109	98	6
Coker 52	14.7	68.7	5.2	9.9	6.0	22.6	63.8	54.4	47	100	96	4

[1] Corrected to a standard 65% moisture.
* Experimentals.

Table 31. Performance of corn silage - Northern Mountains - Area I. Ashe County - 1968.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
*NC 3207	16.2	75.4	5.7	7.4	3.6	28.4	59.8	48.7	72	137	97	0
N.C. 27	12.4	79.5	4.4	9.0	5.1	32.5	57.0	44.8	78	137	95	0
Mean of Test	11.8	75.1	4.1	8.2	4.3	29.7	58.9	47.4	66	127	93	2
McNair X202	11.6	71.2	4.1	7.8	4.0	23.9	62.9	53.1	59	113	88	1
V.P.I. 648	11.6	72.5	4.1	8.4	4.5	26.5	61.1	50.6	64	126	97	1
Pioneer 3196	10.2	73.7	3.6	8.6	4.7	32.3	57.1	45.0	61	121	96	9
Coker S48	8.6	78.2	3.0	8.2	4.3	34.8	55.4	42.5	62	130	82	0
L.S.D. (.05)	2.7	3.4	.9	N.S.	N.S.	N.S.	N.S.	N.S.	7	10	9	4
(.01)	3.7	4.7	1.3	N.S.	N.S.	N.S.	N.S.	N.S.	9	14	12	6
C.V. (%)	15.0	3.0	15.0	N.S.	N.S.	N.S.	N.S.	N.S.	7	5	6	155

[1/] Corrected to a standard 65% moisture.
* Experimentals.

Table 32. Performance of corn silage - Southern Mountains - Area II. Haywood County - 1968.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
N.C. 270	21.6	78.1	7.6	7.9	4.0	26.3	61.3	50.8	68	143	69	1
N.C. 27	17.7	77.1	6.2	8.5	4.5	26.3	61.2	50.7	66	129	65	0
Mean of Test	15.9	77.4	5.6	8.1	4.2	26.8	60.9	50.2	61	126	62	1
McNair 440V	15.6	76.9	5.4	8.5	4.5	26.1	61.4	50.9	59	121	62	0
McNair 425	15.6	76.5	5.5	7.7	3.9	24.5	62.5	52.5	68	132	59	0
Pioneer 3308	15.5	75.8	5.4	7.9	4.0	26.7	60.9	50.3	54	120	69	1
Pioneer 309C	14.4	80.2	5.0	8.3	4.4	25.0	62.2	52.0	58	115	69	0
NC 3207	14.1	77.5	4.9	7.7	3.8	30.9	58.1	46.3	64	127	51	2
Coker S48	13.1	77.2	4.6	8.1	4.2	28.6	59.7	48.5	55	122	54	0
L.S.D. (.05)	8.5	6.9	3.0	N.S.	N.S.	N.S.	N.S.	N.S.	7	10	34	3
(.01)	11.5	9.3	4.0	N.S.	N.S.	N.S.	N.S.	N.S.	9	14	47	4
C.V. (%)	36.1	6.0	36.1	N.S.	N.S.	N.S.	N.S.	N.S.	7	6	37	351

[1/] Corrected to a standard 65% moisture.
* Experimentals.

Table 33. Performance of corn silage - Piedmont - Area III. Chatham, Davie and Burke Counties - 1968.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand Count %	Lodging %
Dixie 82	20.0	55.9	7.0	7.9	4.0	25.9	61.5	51.1	56	115	97	7
*SC 236A	18.3	62.2	6.4	8.7	4.8	26.9	60.8	50.1	53	113	95	2
Pioneer 3009	17.2	62.1	6.0	9.1	5.1	24.7	62.4	52.3	48	109	98	4
*NC 1057	17.0	67.3	6.0	8.6	4.7	26.9	60.9	50.2	48	102	99	2
N.C. 270	16.6	66.9	5.8	9.1	5.1	26.2	61.3	50.8	52	109	99	7
*NC 8019	16.4	61.5	5.7	8.5	4.6	23.8	63.0	53.1	48	102	95	4
Dixie 29 (w)	16.0	59.5	5.6	8.8	4.9	23.3	63.3	53.6	51	111	97	7
Coker S48	16.0	59.0	5.6	8.0	4.1	25.1	62.1	51.9	44	106	99	3
Coker 912 (w)	16.0	61.1	5.6	9.0	5.1	23.9	62.9	53.1	48	106	98	5
Mean of Test	15.9	61.3	5.6	8.6	4.6	25.0	62.1	52.0	49	106	96	4
Coker 52	15.7	61.8	5.5	9.1	5.1	28.3	59.9	48.8	46	104	97	3
McNair 425	15.6	63.3	5.5	9.0	5.1	24.4	62.6	52.6	50	106	96	4
McNair 440V	15.5	60.8	5.4	8.7	4.8	24.4	62.5	52.5	48	101	93	6
Pioneer 3048	14.9	62.4	5.2	8.5	4.6	24.4	62.5	52.5	48	106	94	4
N.C. 27	14.8	65.7	5.2	7.5	3.6	27.2	60.6	49.9	54	114	99	6
Greens 300A	14.8	50.7	5.2	8.7	4.8	21.4	64.6	55.4	40	96	98	3
*NC 6019	14.3	62.4	5.0	8.3	4.4	24.8	62.3	52.2	49	101	92	4
Wagwood 200	14.2	62.6	5.0	8.0	4.1	24.4	52.5	52.5	44	105	100	4
*NC 3207	13.7	58.1	4.8	8.6	4.7	24.4	62.6	52.6	47	107	78	3
L.S.D. (.05)	4.0	6.5	1.4	1.1	1.0	2.8	2.0	2.7	3	6	10	4
(.01)	5.3	8.5	1.9	1.5	1.4	3.7	2.6	3.6	4	8	13	6
C.V. (%)	28.0	13.2	28.0	N.S.	N.S.	N.S.	N.S.	N.S.	7	7	9	112

[1/] Corrected to a standard 65% moisture.
* Experimental.

Table 34. Performance of corn silage - Southern Coastal Plain - Area IV. Edgecombe County - 1968

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Fla. 200A	18.3	66.4	6.4	8.5	4.6	26.0	61.4	51.0	56	111	100	3
S.C. 236	17.9	61.2	6.3	8.7	4.8	24.9	62.2	52.1	52	109	100	2
Dixie 18	17.7	62.9	6.2	8.5	4.6	27.1	60.7	50.0	57	110	100	2
McNair 440V	17.5	60.8	6.1	8.7	4.8	25.8	61.6	51.2	48	93	100	4
*NC 1057	17.5	64.8	6.1	9.0	5.1	27.0	60.8	50.1	48	95	100	2
*SC 236A	16.8	65.7	5.9	8.6	4.7	28.2	59.9	48.9	51	105	100	2
Dixie 82	16.7	60.2	5.9	8.0	4.1	24.3	62.6	52.6	53	106	100	7
N.C. 270	16.5	65.8	5.8	8.7	4.8	25.1	62.1	51.9	50	110	100	4
Mean of Test	16.5	63.5	5.8	8.8	4.8	25.0	62.2	52.0	51	102	100	3
*NC 6019	16.0	63.5	5.6	8.3	4.4	23.1	63.5	53.8	50	94	100	3
Pioneer 3009	15.6	61.7	5.5	8.5	4.6	25.5	61.8	51.5	49	105	100	1
McNair 425	15.5	62.6	5.4	8.7	4.7	22.1	64.2	54.8	50	96	100	3
Coker 911 (w)	15.3	65.3	5.4	10.0	6.0	25.0	62.2	52.0	50	100	100	1
Pioneer 3048	15.1	64.9	5.3	8.7	4.8	24.2	62.7	52.7	51	101	100	3
Coker 52	14.5	63.5	5.1	9.6	5.7	21.4	64.7	55.5	43	92	100	3
L.S.D. (.05)	3.3	4.1	1.2	N.S.	N.S.	N.S.	N.S.	N.S.	4	8	N.S.	3
(.01)	4.4	5.4	1.5	N.S.	N.S.	N.S.	N.S.	N.S.	5	11	N.S.	4
C.V. (%)	14.5	4.7	14.5	N.S.	N.S.	N.S.	N.S.	N.S.	6	6	N.S.	87

[1/] Corrected to a standard 65% moisture.
* Experimentals.

Table 35. Performance of sorghum silage - Piedmont - Area III. Three-year average. 1966-1967-1968. Average of 9 locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Pioneer 931	20.4	67.8	7.1	7.8	3.9	31.0	58.0	46.2	95	107	94	1
DeKalb FS-26	15.7	73.9	5.5	8.0	4.2	24.0	62.8	52.9	98	89	93	3
Mean of Test	14.1	69.9	4.9	8.4	4.5	24.1	62.8	52.8	90	81	92	1
Sart	13.7	73.5	4.8	7.2	3.4	23.4	63.3	53.6	100	96	81	0
Leafmaster 43	13.4	71.6	4.7	9.1	5.2	25.9	61.5	51.1	95	68	96	0

[1/] Corrected to a standard 65% moisture.

Table 36. Performance of sorghum silage - Piedmont - Area III. Two-year average. 1967-1968. Average of 6 locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Ear Height Inches	Stalk Height Inches	Stand %	Lodging %
Pioneer 931	22.5	69.4	7.9	7.4	3.6	32.8	56.8	44.6	94	114	98	2
DeKalb FS-26	16.7	75.0	5.8	7.8	4.0	24.6	62.4	52.4	92	96	96	4
Sart	15.4	74.4	5.4	6.6	2.8	24.1	62.8	52.8	95	102	85	0
Mean of Test	15.2	72.0	5.3	8.2	4.2	25.4	61.9	51.6	88	87	96	1
Leafmaster 43	14.1	73.0	5.0	9.1	5.2	26.8	60.8	50.2	90	74	100	0
DeKalb FS-15	13.4	69.6	4.7	8.7	4.8	22.8	63.6	54.0	82	74	97	2
Sugar Drip	11.8	75.2	4.2	7.0	3.2	23.2	63.4	53.6	96	98	86	0

[1/] Corrected to a standard 65% moisture.

Table 37. Performance of sorghum silage - Piedmont - Area III. Iredell, Alamance, Cabarrus Counties - 1968

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Days to Mid-Bloom	Stalk Height Inches	Stand %	Lodging %
Pioneer 931	23.3	65.1	8.2	6.6	2.8	33.8	56.1	43.5	87	101	100	4
DeKalb FS-26	18.9	71.2	6.6	6.4	2.6	25.1	62.1	51.9	86	89	100	8
Sart	17.8	70.8	6.2	5.6	1.9	24.3	62.7	52.7	90	91	98	0
Summergrazer	16.8	64.5	5.9	7.2	3.4	26.9	60.9	50.2	80	90	100	1
Ga. 1588E	16.8	67.7	5.9	7.1	3.3	25.4	61.8	51.6	80	72	100	2
Leafmaster 43	16.5	66.1	5.8	7.8	4.0	27.9	60.1	49.2	86	71	100	1
Mean of Test	16.3	67.2	5.7	7.2	3.3	25.5	61.8	51.5	84	79	99	2
NK 318S	15.8	65.9	5.5	8.5	4.6	23.8	63.0	53.1	80	71	100	0
Ga. 1749E	14.6	67.5	5.1	8.0	4.2	23.7	63.0	53.2	79	63	100	0
DeKalb FS-15	14.0	63.6	4.9	8.1	4.2	22.5	63.9	54.4	79	69	98	3
T-E T.D.N.	13.8	67.1	4.8	7.6	3.8	24.9	62.2	52.1	87	72	98	7
Silo Fill 33	13.7	65.1	4.8	7.3	3.5	25.0	62.1	52.0	80	67	100	0
Sugar Drip	13.4	71.5	4.7	5.7	2.0	22.5	63.9	54.3	91	93	92	0
L.S.D. (.05)	2.4	3.4	.8	1.3	1.2	3.9	2.7	3.7	5	8	4	N.S.
(.01)	3.3	4.7	1.1	1.8	1.6	5.3	3.7	5.1	6	11	5	N.S.
C.V. (%)	13.9	4.8	13.9	N.S.	N.S.	.3	N.S.	.1	6	6	2	371

[1/] Corrected to a standard 65% moisture

SOYBEAN VARIETIES

The soybean is an important cash crop in North Carolina and is planted throughout the Coastal and Piedmont Areas. This is reflected by the increase in acreage planted the last few years. Since 1953, the acreage has increased from 258,000 acres harvested to over an estimated one million acres harvested in 1967. In 1962, around 91% of the soybeans produced in the United States went into edible use and 9% into industrial uses. This type of use would indicate continued demands for soybeans.

With the improvement in cultural practices and varieties, yields are at a high level. In 1953 the state average yield was 16 bushels per acre compared to an estimated 26 bushels per acre for 1967. The relatively high prices received by growers make it profitable for farmers to produce soybeans.

Four different maturity groups are grown in North Carolina - Groups V, VI, VII and VIII - with maturity dates ranging from September 16 to November 10, depending upon the group in which the variety is classified. Group V is the earliest and Group VIII the latest maturing.

There are several high yielding varieties available to the producer from which he may choose according to desired maturity date, lodging resistance, etc. Information on the performance of commercial varieties and experimental lines grown in different locations in the state is provided in this report. This information serves as a guide to growers and agricultural workers in choosing a variety and to soybean breeders in their development of varieties.

EXPERIMENTAL PROCEDURES

Experimental lines and commercial varieties developed by both public and private agencies are included in this program. In order to qualify for

acceptance the proposed entry must reveal meritorious performance when compared with recognized varieties.

Any individual or firm may make application for having entries included. A fee is charged on an entry basis. Personnel of the testing program may include entries about which further information is desired.

Agencies Sponsoring Entries

Coker's Pedigreed Company, Hartsville, South Carolina

N. C. Agricultural Experiment Station and USDA, Raleigh, N. C.

McNair Seed Company, Laurinburg, North Carolina

Test Locations

Five tests were conducted in 1968 with three in the Coastal Plain Area and two in the Piedmont Area, as shown in Figure 1. All were located on private farms except in the Washington County Test, which was conducted on an experiment station.

The severe drought of August and September adversely affected the soybean crop and a considerable acreage of late planted soybeans intended for beans were abandoned or cut for hay.

Seasonal Conditions

The growing season was generally unfavorable for the production of good yields of soybeans in the Coastal Plain and Piedmont Areas of North Carolina for 1968. All tests were planted in a good seed bed. However, a hard packing rain, after planting at Union County caused irregular stands, then later hard rains caused considerable erosion across the rear of the test. The late varieties had to be discarded.

At all other locations good stands were obtained and good growing conditions existed during the early part of the growing season resulting in fair yields. Farmers in many areas of the state harvested small size beans resulting from severe dry weather conditions late in the growing season.

Soybean production in North Carolina in 1968 was 42 percent below the record crop of 1967. The state per acre yield in 1968 was only 15 bushels per acre compared with 24.5 bushels per acre in 1967.

Cultural Practices

Seed bed preparation, date of planting, fertilization and other cultural practices were in accord with good farming practices and are listed in Table 38. Planting, harvesting and yield measurements were directly supervised by personnel of the North Carolina Agricultural Experiment Station. Treflan was used as a herbicide at all locations.

Table 38. Cultural practices for soybean performance trials.

Area and Co-operator	Fertilizer lbs. and Grade	Row Spacing Inches	Date of Planting	Date of Harvest
Coastal Plain				
Sampson County Garnet & Howard Boney	300 3-9-18	38"	May 9	October 9 November 18
Wayne County George W. Aycock, Jr.	300 10-20-20	38"	April 29	October 9 November 14
Washington County J. W. Smith	250 0-10-20	38"	May 10	October 29 November 14
Piedmont				
Union County Elbert C. Griffin	400 2-6-12	38"	May 15 (Late)	October 10 Discarded
Wake County Oscar Stephenson	400 3-9-18	38"	May 21	October 9 November 18

Criteria for Evaluating Soybean Varieties

Yield bu./acre. Each plot was harvested and weighed and converted to bushels per acre. All yields were adjusted to 14% moisture.

Moisture. A sample was taken from each plot immediately after the beans were weighed. The samples were placed in waterproof, plastic-coated paper bags and the moisture percent was determined on an official moisture meter.

Plant Height. Plant height was determined by measuring from the ground to top of the plant in inches.

Lodging. Lodging was rated according to the following scale:

1. All erect
2. Few plants leaning or down
3. All plants leaning at 45 degrees or more
4. All plants down

Maturity Group. Maturity groups ranged from Group V through Group VIII. The dates of maturity are as follows:

Group V	September 16-30
Group VI	October 1-16
Group VII	October 17-31
Group VIII	November 1-10

RESULTS

Performance data over a two and three year period are shown in Tables 39 and 40 . Varietal performance varied between locations, depending upon the seasonal conditions. Tables 41 and 42 show data on yield from each location as well as the mean for the five locations. It would depend on maturity desired, plant characteristics and other factors as to what variety would be most suitable for a specific location.

The maturity group in which each entry belongs is listed in Tables 41 and 42 . The approximate date of maturity for these groups has been presented earlier. Information on lodging, plant height and moisture are shown in Tables 43 and 44 .

The data should be considered not only for yield but for maturity group and other characters which might influence the selection of a variety. All available data should be studied to aid in selecting a variety that best fits the management practices of the producer.

Table 39. Performance of Soybeans. Two year average - 1967-1968. Average of 9 Locations.

Entries	Yield Bu/A	Lodging	Plant Height Inches	Moisture
		EARLY MATURING ENTRIES		
Dare	39.4	1.0	34	14.64
Mean of Test	38.8	1.0	33	14.83
Hill	37.0	1.1	32	14.92
		LATE MATURING ENTRIES		
N64-2430	41.4	1.0	38	14.21
Coker Hampton 266	39.8	1.2	38	14.63
N64-2451	39.2	1.0	36	14.16
N62-2249	39.2	1.4	38	14.05
Coker 208	39.0	1.0	34	14.84
N63-858	38.5	1.0	39	14.26
Mean of Test	38.0	1.1	36	14.25
York	37.9	1.0	32	14.47
N63-1131	37.8	1.0	36	14.45
Lee	36.6	1.2	32	14.22
Bragg	35.6	1.1	40	13.94
Pickett	35.1	1.2	32	14.04

Table 40. Performance of Soybeans. Three year average - 1966-1967-1968. Average of 14 Locations.

Entries	Yield Bu/A	Lodging	Plant Height Inches	Moisture
		EARLY MATURING ENTRIES		
Dare	37.6	1.0	32	15.01
Mean of Test	37.0	1.0	32	15.12
Hill	34.3	1.1	31	15.27
		LATE MATURING ENTRIES		
Coker Hampton 266	40.1	1.1	37	15.97
Coker 208	40.0	1.0	33	15.56
N63-858	37.3	1.0	38	14.70
Mean of Test	37.3	1.1	36	14.80
N63-1131	36.9	1.0	36	14.84
Lee	36.2	1.3	32	14.50
Bragg	35.8	1.1	41	14.35
Pickett	34.2	1.1	32	14.45

EARLY MATURING ENTRIES

Table 41. Performance of Soybeans by locations and combined (Bu/A) 1968.

Entries	Washington	Wayne	Sampson	Wake	Union	Average	Maturity Group
			Commercial Varieties				
Dare	49.9	33.3	42.6	16.7	32.1	34.9	V
Hill	51.4	26.4	37.8	14.4	30.5	32.1	V
			Experimentals				
N63-2729	53.7	34.5	40.8	14.7	37.5	36.2	V
N62-2378	54.8	34.8	43.9	16.5	36.2	37.3	V
N63-2765	45.1	31.6	40.5	15.8	31.7	33.0	V
Mean of Test	51.0	32.1	41.1	15.6	33.6	34.7	
L.S.D. (.05)	N.S.	5.3	3.7	N.S.	N.S.	2.9	
(.01)	N.S.	N.S.	N.S.	N.S.	N.S.	4.0	
C.V. (%)	17.4	10.8	5.9	16.9	14.9	14.7	

LATE MATURING ENTRIES

Table 42. Performance of Soybeans by locations and combined (Bu/A) 1968.

Entries	Washington	Wayne	Sampson	Wake	Union	Average	Maturity Group
			Commercial Varieties				
Coker 208	53.6	32.6	26.1	22.7		33.7	VIII
McNair 800	44.1	30.1	32.6	21.8		32.1	VIII
Lee 68	55.0	20.5	21.9	18.9		29.1	VI
Bragg	51.6	28.2	26.7	21.6		32.0	VII
Pickett	47.0	25.6	28.2	19.1		30.0	VI
York	55.9	25.8	31.4	10.8		31.0	VI
Lee	54.4	27.7	28.8	18.5		32.4	VI
Coker Hampton 266	57.2	30.0	28.4	21.2		34.2	VIII
Davis	60.1	30.9	26.2	15.6		33.2	VI
			Experimentals				
N64-2451	56.2	28.7	26.8	18.8		32.6	VIII
N65-1758	49.8	32.5	26.6	12.4		30.4	VI
N63-1131	49.3	24.1	29.9	20.8		31.1	VII
N63-858	47.0	28.5	31.0	21.2		31.9	VII
N62-2249	56.1	29.9	26.9	15.1		32.0	VII
N62-2148	57.2	34.0	32.4	15.0		34.7	VI
N64-2430	54.1	34.1	31.4	21.0		35.2	VII
N62-2255	52.4	27.3	30.8	18.1		32.2	VI
F63-4000	48.8	29.8	27.2	28.0		33.4	VIII
Blend 1	57.1	33.7	31.0	16.3		34.5	
Blend 2	61.1	35.0	28.9	15.3		35.1	
Mean of Test	53.4	29.5	28.7	18.6		32.5	
L.S.D. (.05)	5.2	7.0	N.S.	3.4		N.S.	
(.01)	6.8	N.S.	N.S.	4.4		N.S.	
C.V. (%)	7.0	17.2	17.8	13.1		13.0	

EARLY MATURING ENTRIES

Table 43. Lodging, plant height and moisture of Soybean varieties combined for Washington, Wayne, Wake, Sampson and Union Counties - 1968.

Entries	Lodging	Plant Height (inches)	Moisture %
		Commercial Varieties	
Dare	1.0	33	14.17
Hill	1.0	31	14.44
		Experimentals	
N63-2769	1.0	32	14.63
N62-2378	1.0	31	14.35
N63-2765	1.0	32	14.85
Mean of Test	1.0	32	14.48
L.S.D. (.05)		1	N.S.
(.01)		N.S.	N.S.
C.V. (%)		7	4.7

LATE MATURING ENTRIES

Table 44. Lodging, plant height and moisture of Soybean varieties combined for Washington, Wayne, Wake and Sampson.

Entries	Lodging	Plant Height (inches)	Moisture %
		Commercial Varieties	
Coker 208	1.0	34	16.70
McNair 800	1.0	35	15.51
Lee 68	1.0	33	15.38
Bragg	1.0	39	15.17
Pickett	1.0	32	15.21
York	1.0	30	16.10
Lee	1.0	33	15.36
Coker Hampton 266	1.0	37	16.27
Davis	1.0	38	15.42
		Experimentals	
N64-2451	1.0	35	15.67
N65-1758	1.0	32	15.64
N63-1131	1.0	35	16.02
N63-858	1.0	38	15.82
N62-2249	1.0	37	15.32
N62-2148	1.0	34	15.41
N64-2430	1.0	36	15.62
N62-2255	1.0	35	15.07
F63-4000	1.0	38	16.08
Blend 1	1.0	37	15.39
Blend 2	1.0	37	15.16
Mean of Test	1.0	35	15.62
L.S.D. (.05)		3	N.S.
(.01)		4	N.S.
C.V. (%)		6	6.0

COTTON

Cotton varieties with improved spinning characteristics and fiber qualities are creating much interest in the southeast. In addition more efficient production practices, better insect control and higher yielding varieties are factors which add up to more profitable cotton production.

With the shift to mechanization, there is a need for cotton varieties that are better adapted for mechanical harvesting. Some varieties are being bred for mechanical picking. Under certain conditions, specific characteristics such as smoothleaf give varieties a distinct grade advantage over other varieties when harvested mechanically. Breeders are constantly searching for genetic characters which will be advantageous to the cotton producer and acceptable to the end user.

Through the continued effort of plant breeders, more varieties are being developed to suit the various environmental conditions and production systems which are present in North Carolina. The variety picture has changed notably within recent years and indications are that this trend will continue. Today, several high yielding varieties are available for planting. Varieties with more disease resistance and better lint characteristics are being developed which will be beneficial to North Carolina cotton producers.

The cotton producer thus has a choice of varieties for planting, and his success in production may be influenced considerably by his selection. Choice of variety is influenced not only by production potential, but also by suitability for mechanical harvesting, earliness of maturity, quality of fiber, storm resistance, disease resistance and spinning characteristics.

This report attempts to provide information on the performance of commercial varieties and experimental lines grown in various geographical areas of the state. This information serves as a guide to cotton breeders in their future development of varieties, to agricultural workers and to growers for use in choosing a variety to plant.

The results of the North Carolina Official Cotton Variety Trials for the 1968 season and summary of the tests conducted during the past three years are presented in this report.

EXPERIMENTAL PROCEDURE

Experimental lines and commercial varieties developed by public and private agencies are included in this report. One requirement for acceptance is quantitative data from experiments in which the proposed entry is compared with recognized varieties. These data must reveal meritorious performance in order for a variety to qualify for the tests.

Any individual or firm may make application for having entries included. A fee is charged on an entry basis. Personnel of the testing program may include entries about which further information is desired.

Agencies Sponsoring Entries

Coker's Pedigreed Seed Company, Hartsville, South Carolina

Cotton Hybrid Research, Inc., Athens, Georgia

McNair Seed Company, Laurinburg, North Carolina

North Carolina Agricultural Experiment Station, Raleigh, N. C.

University of Georgia, Tifton, Georgia

Seasonal Conditions

Cotton production in North Carolina in 1968 was above 1967 but still short of a long time average. Good growth resulted from good stands and the crop had excellent prospects. Extremely hot and dry weather late in the season caused a reduction in yield in many areas.

Lint yield per harvested acre was 300 pounds compared with a record low yield of 277 pounds of lint per acre for 1967.

Test Locations

Four locations were planted in 1968 with two in the Coastal Plain Area and two in the Piedmont as shown in Figure 1. All of the tests were located on private farms.

Cultural Practices

Cultural practices, such as seed bed preparation, date of planting, fertilization, cultivation and insect control measures were in accord with good farming practices. These are listed for each test in Table Planting, harvesting and yield measurements were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

Criteria for Evaluating Cotton Varieties

A randomized block design with four replications was used at each location. Plot size at all locations was two rows 27 feet long. Row spacing was the same at each location as shown in Table 45.

Yield of Seed Cotton: The plots were harvested individually and average pounds of seed cotton per acre were calculated.

Table 45. Cultural practices for cotton performance trials.

Area and co-operator	Fertilizer lbs/A and Grade	Herbicide preemergence	Row Spacing in.	Date of Planting	Date of Harvest
Rutherford County Van McDaniels	600R 8-8-8 200 (Topdressed) Nit.-Solution	Cotoran	38"	May 2	October 24
Edgecombe County Melvin Smiley	700R 5-10-10	Treflan	38"	April 29	October 23
Robeson County Varsar Bullard	100R 10-20-20 700B 0-10-20 30 (Topdressed) Nit.-Solution	Treflan	38"	April 4	September 20
Anson County Calvin Phillips		Treflan	38"	April 15	September 13

Key to Fiber Test Results

Fibrograph (Uniformity Ratio)

45 and above - Uniform

40 - 44.9 - Average

39.0 and below - Irregular

Micronaire (Fib. wt./in. - Micrograms)

2.9 and below - Very fine

2.0 - 3.9 - Fine

4.0 - 4.9 - Average

5.0 - 5.9 - Coarse

6.0 and above - Very coarse

Pressley (Tensile Strength, 100 psi)

96 and above - Very strong

86 - 95 - Strong

76 - 85 - Average

66 - 75 - Fair

65 and below - Weak

Yield of Lint: This was calculated using the lint percentage of each plot and converting the pounds of seed cotton per plot to pounds of lint per acre.

Lint Percentage: Boll samples were taken from each plot when harvested. The weight of lint ginned from this sample of seed cotton was expressed as a percentage of the weight of seed cotton.

Staple Length:[1/] A Federal Cotton Inspector determined the staple length on the ginned samples of each plot.

Bolls per Pound of Seed Cotton: The number of bolls required to make one pound of seed cotton was determined by weighing the 50 boll samples from each plot at each location and converting it to a pound basis.

Span Length: The length which a certain percentage of fibers from the original fiber population would span when caught at random along the length of the fiber.

Uniformity Ratio: Ratio of 50% span length to 2.5% span length.

Micronaire: The micronaire test is a test for fineness of the fiber. The micronaire instrument is used to measure the resistance to the passage of air through a 50 grain sample of cotton compressed to a given volume.

Tensile Strength: This indicates the tensile strength of the fiber in pounds per square inch.

The operations and measurements required for the development of data on yield and such other agronomic characters as boll size and lint percentage were performed by personnel at the experiment station. Fiber samples from all replications at all locations were sent to the North Carolina Department of

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[1/] Acknowledgement is given to the Cotton Division, Emmett C. Hanson, In Charge, Agricultural Marketing Service, USDA, Raleigh, North Carolina, for making staple length determinations.

Agriculture, Market Division, Engineering Section for analyses.[2/]

RESULTS

Varietal performance may vary from year to year and annual results may seem inconsistent; therefore, performance data obtained over a period of years are more reliable than for any one year.

The data presented in Tables 46 and 47 are summary data for various years and locations and indicate how varieties have been performing over a period of years at various locations. A three year average performance is shown for lines and varieties in Table 46.

Individual location data are presented in Table 48. Although there were statistical differences for most characters in the individual location, the performance of a single location can be misleading.

In selecting a variety for planting, characteristics that influence a profitable production should be studied. Amount of lint produced per acre is an important criterion, yet the variety should be resistant to prevalent diseases, particularly Fusarium Wilt. If the cotton is to be mechanically harvested, then it should mature uniformly and be compact. Seed quality is most important to successful production of cotton. Weak seed do not perform well under adverse weather conditions at planting time. Other plant characteristics considered in selecting a variety of cotton are storm resistance, plant type and boll size. Lint characteristics, such as staple strength and length, gin turnout and fiber quality affect prices, harvesting costs and market demand are becoming more important for cotton producers in the Southeast to meet competition from other cotton producing areas.

[2/] Fiber analysis was made in the Market Division, Engineering Section, N.C.D.A., under the supervision of Charles B. Elks. The assistance of Mr. Elks and his staff is gratefull acknowledged.

Table 46. Performance of cotton varieties - Three Year Average - 1966-1967-1968. Average of 6 Locations.

Variety or Line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lb. of seed Cotton	Fiber Properties: Span Length 66.7% (expressed in in.)	Span Length 50% (expressed in in.)	Span Length 2.5% (expressed in in.)	Uniformity Ratio	Micronaire Fib. Wt./in. micrograms	Tensile Strength "Pressley"
Coker 201	621	1630	38.1	1 3/32	86	.39	.49	1.08	46	4.8	84.1
Mean of Test	621	1697	36.6	1 3/32	86	.39	.50	1.08	46	4.5	86.5
TH-149	586	1665	35.2	1 3/32	75	.40	.51	1.09	46	4.6	89.6

Table 47. Performance of cotton varieties - Two Year Average 1967-1968. Average of 5 locations.

Variety or Line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lb. of seed Cotton	Fiber Properties: Span Length 66.7% (expressed in in.)	Span Length 50% (expressed in in.)	Span Length 2.5% (expressed in in.)	Uniformity Ratio	Micronaire Fib. Wt./in. micrograms	Tensile Strength "Pressley"
*Coker 4104	689	1859	37.0	1 1/8	76	.42	.53	1.14	48	4.2	84.8
Coker 201	653	1704	38.3	1 1/8	80	.42	.52	1.09	47	4.6	85.1
Hy-Bee 100	647	1770	36.5	1 1/8	77	.40	.50	1.09	46	4.4	88.0
Mean of Test	630	1724	36.5	1 1/8	80	.41	.52	1.10	47	4.4	88.6
Hy-Bee 401	624	1717	36.3	1 1/8	78	.41	.50	1.08	47	4.6	93.4
Coker 413-68	612	1660	36.6	1 3/32	84	.42	.54	1.14	47	4.1	90.2
TH-149	600	1709	35.2	1 1/8	69	.42	.52	1.10	48	4.5	91.0
*Coker 413-502	547	1512	36.0	1 1/8	86	.42	.52	1.13	46	4.1	90.6

*Experimentals.

Table 48. Performance of cotton varieties. Average of Robeson, Anson, Rutherford and Edgecombe Counties. 1968.

Variety or Line	Lint Lbs/A	Seed cotton Lbs/A	Lint %	Staple length in.	Bolls/lb. of seed Cotton	Fiber Properties: Span Length 66.7% (expressed in in.)	Span Length 50% (expressed in in.)	Span Length 2.5% (expressed in in.)	Uniformity Ratio	Micronaire Fib. Wt./in. Micrograms	Tensile Strength "Pressley"
Coker 201	682	1814	37.6	1 3/32	88	.40	.50	1.07	46	4.5	89.0
*McNair 6306	666	1901	35.1	1 1/16	82	.39	.49	1.08	46	4.5	92.2
Hy-Bee 100	657	1805	36.3	1 3/32	86	.39	.49	1.05	46	4.3	94.8
*Coker 5113	653	1748	37.4	1 3/32	86	.42	.52	1.09	48	4.0	88.4
Hy-Bee 401	646	1793	36.0	1 3/32	87	.40	.49	1.07	46	4.2	94.2
*Coker 421-7923	628	1761	35.5	1 3/32	98	.41	.52	1.10	47	4.0	92.2
Mean of Test	620	1724	35.9	1 3/32	88	.40	.50	1.07	47	4.2	93.1
McNair 1032-B	615	1700	36.0	1 1/16	97	.39	.48	1.01	47	4.3	90.1
*Coker 4104	614	1690	36.2	1 3/32	84	.41	.51	1.11	47	4.1	89.1
*McNair 6207	608	1686	36.0	1 3/32	91	.39	.48	1.06	46	4.1	88.7
Coker 413-68	603	1669	35.9	1 3/32	95	.41	.52	1.11	47	4.0	93.1
TH-149	602	1735	34.8	1 3/32	74	.40	.51	1.08	47	4.4	94.6
Atlas 67	585	1647	35.4	1 3/32	87	.41	.51	1.06	48	4.4	102.0
*Coker 413-502	528	1488	35.4	1 3/32	95	.41	.51	1.11	46	3.9	94.5
L.S.D. (.05)	66	182	1.0	.6/32	5	.01	.01	.01	.9	.2	4.1
(.01)	86	N.S.	1.3	N.S.	7	.02	.02	.02	1	.3	5.3
C.V. (%)	13	13	3.3	1.7	9	3.8	3.5	2.4	2	6	2.7

*Experimentals.