Research Report No. 21
December, 1966

Measured crop performance

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

1966

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

John C. Rice, R. W. Mozingo, E. L. Jones and G. C. Oliver

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 1966[2/], as well as summary tables for the past two and three years.

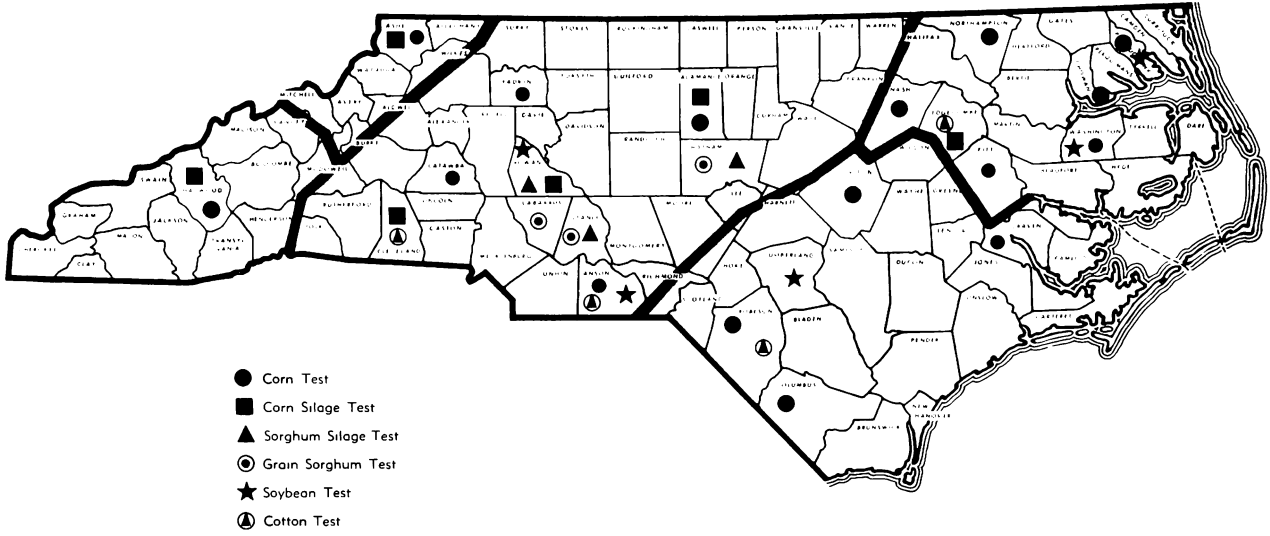
It is hoped that the organization of this bulletin will provide data to those interested in the various crops in a complete form which is readily available. The large number of hybrids and varieties available for planting within this state makes it mandatory that information be available to seedsmen,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

[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 Villen and Joe Snavely. This assistance is gratefully acknowledged.

FIGURE 1.—LOCATION OF OFFICIAL VARIETY TEST 1966



CO-OPERATORS 1966

Corn

Area I - Northern Mountains
Ashe County, Upper Mountain Research Station, Dana G. Tugman, Superintendent, Laurel Springs, N. C. Extension Chairman A. B. Addington 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
Anson County, Zeb Pate, Wadesboro, North Carolina Extension Chairman J. R. Potter, Jr. and assistants, co-operating
Catawba County, Dewey Hunsucker, Conover, North Carolina Extension Chairman J. F. Giles and assistants, co-operating
Alamance County, Raymond Braxton, Graham, North Carolina Extension Chairman G. R. Coble and assistants, co-operating
Yadkin County, Fred J. Brandon, Yadkinville, North Carolina 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, C. L. Humphrey, Dover, North Carolina Extension Chairman A. T. Jackson and assistants, co-operating
Johnston County, Donnie Sanders, Clayton, North Carolina Extension Chairman C. W. Tarlton and assistants, co-operating
Robeson County, Klynn Lowery, Rowland, North Carolina Extension Chairman W. C. Williford and assistants, co-operating

Area V - Northern Coastal Plain - Full Season
Northampton County, J. C. Long, Margettville, North Carolina Extension Chairman B. H. Harrell and assistants, co-operating
Pitt County, C. X. James, Bethel, North Carolina Extension Chairman S. C. Winchester and assistants, co-operating
Nash County, Cooper Smith, Nashville, North Carolina Extension Chairman J. P. Woodard and assistants, co-operating

Area VI Northern Coastal Plain Short Season
Pasquotank County, Charles Moore, Elizabeth City, North Carolina Extension Chairman S. L. Lowery and assistants, co-operating
Washington County, Tidewater Research Station, J. W. Smith, Superintendent
Plymouth, North Carolina Extension Chairman Guy M. Whiteford and assistants co-operating
Chowan County, R. L. Bunch, Edenton, North Carolina Extension Chairman C. W. Overman 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 A. B. Addington, co-operating

Area II Southern Mountains
Haywood County, Mountain Research Station, J. R. Edwards, Superintendent Waynesville, N. C. Extension Chairman V. L. Holloway, co-operating

Area III Piedmont
Alamance County, Paul McBane, Snow Camp, North Carolina
Extension Chairman G. R. Coble and assistants, co-operating
Rowan County, Piedmont Research Station, Clyde McSwain, Superintendent
Salisbury, N. C. Extension Chairman R. R. McNeely and assistants, co-operating
Cleveland County, C. W. Goforth, Shelby, North Carolina
Extension Chairman H. R. Clapps and assistants, co-operating
Area IV - Southern Coastal Plain
Edgecombe County, E. G. Davenport, Tarboro, North Carolina
Extension Chairman C. H. Lockhart and assistants, co-operating

Sorghum Silage

Rowan County
Piedmont Research Station, Clyde McSwain, Superintendent, Salisbury, N. C.
Extension Chairman R. R. McNeely and assistants, co-operating
Chatham County
Horace Mann, Pittsboro, North Carolina
Extension Chairman John Cooper and assistants, co-operating
Stanly County
Spurgeon Brooks, Richfield, North Carolina
Extension Chairman V. A. Huneycutt and assistants, co-operating

Grain Sorghum

Chatham County
Russell and Eugene Johnston, Siler City, North Carolina
Extension Chairman John Cooper and assistants, co-operating
Cabarrus County
Ralph O. Simmons, Kannapolis, North Carolina
Extension Chairman J. R. Allen and assistants, co-operating
Stanly County
Hal Rogers, Richfield, North Carolina
Extension Chairman V. A. Huneycutt and assistants, co-operating

Soybeans

Rowan County
Piedmont Research Station, Clyde McSwain, Superintendent, Salisbury, N. C.
Extension Chairman R. R. McNeely and assistants, co-operating
Anson County
T. A. McRae, Jr., Wadesboro, North Carolina
Extension Chairman J. R. Potter and assistants, co-operating
Cumberland County
Rowland Williams, Wade, North Carolina
Extension Chairman P. E. Dew and assistants, co-operating
Washington County
Tidewater Research Station, J. W. Smith, Superintendent, Plymouth, North Carolina
Extension Chairman Guy M. Whitford and assistants, co-operating
Pasquotank County
Charles Moore, Elizabeth City, North Carolina
Extension Chairman S. L. Lowery and assistants, co-operating

Cotton

Anson County
Thomas S. Rhyne, Cheraw, South Carolina
Extension Chairman J. R. Potter, Jr. and assistants, co-operating

Robeson County
Klynn Lowery, Rowland, North Carolina
Extension Chairman J. R. Potter, Jr. and assistants, co-operating

Cleveland County
Glenn Sperling, Waco, North Carolina
Extension Chairman H. R. Clapp and assistants, co-operating

Edgecombe County
Melvin Smiley, Whitakers, North Carolina
Extension Chairman Charles H. Lockhart and assistants, co-operating

Part I

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 receives its most thorough evaluation.

Results of the North Carolina Official Corn Trials for the 1966 season are presented in this report. Two and three year summaries are also 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 in 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 1966 tests are shown in Table 1.

Table 1. Name and address of sponsoring agencies in the 1966 North Carolina Corn Performance Trials along with designation used to identify the hybrids in the trials.

Name	Address	Hybrid Designation
Ag. Alumni Purdue Univ.	Lafayette, Ind.	AA
Asgrow Seed Company	Atlanta 2, Georgia	Asgrow
Coker Pedigreed Seed Co.	Hartsville, S. C.	Coker
Cotton Hybrid Research, Inc.	Athens, Georgia	CHR, Pennington
DeKalb Agri. Assn., Inc.	DeKalb, Illinois	DeKalb
Edmund and Son Seed Co.	Chadbourn, N. C.	Edmund
Excel Sorghum Company	Plainview, Texas	Excel
Greenwood Seed Co.	Thomasville, Georgia	Greenwood
Hollyview Farms	Mt. Airy, N. C.	Hollyview
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.
Pfister Assoc. Growers, Inc.	Aurora, Illinois	P.A.G.
Pioneer Corn Company, Inc.	Tipton, Indiana	Pioneer
Ray Taylor Farms	Tifton, Georgia	Taylor
S. C. Agric. Expt. Sta.	Clemson, S. C.	S. C.
Speight Seed Farms	Winterville, N. C.	Speight

Table 1. Continued.

Name	Address	Hybrid Designation
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 1966 tests were planted 8 inches in the drill. Soil tests were made and fertilization was applied in accordance with recommendations. At topdressing time 175 pounds of liquid nitrogen was applied on all of the short and full season tests in Area V.

Depending upon the number of entries, the following experimental designs were used: A 5 x 5 triple rectangular lattice and a 7 x 8, 6 x 7, and 6 x 6 simple rectangular lattice. Data were analysed by locations and combined over

locations within an area. Individual location and combined data are shown for area III.

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. Row width of the various tests were 40 inches. The plots were two rows wide and 15 feet long with 16 kernels planted per row, except for the short season tests, which had 21 kernels per row. The alley width was 6 feet which was required 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 used as a herbicide on most tests at planting. At layby, herbicides were applied in the form of liquid nitrogen, 2, 4-D and Lorox or Atrazine to control late grass and weeds. Excellent weed control was obtained in most test. 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.

Table 2. Cultural practice used on the corn test.

Area and Co-operator	Fertilizer lbs/A	Herbicide[1/] Pre emerge	Top Dressing lbs. of N/A	Row Spacing Inches	Date of Planting	Date of Harvest
Area I						
Upper Mt. Res. Sta.	800		150			
Dana G. Tugman	10-20-20	Atrazine	ammon. nit.	40"	May 18	Oct. 31
Area II						
Lower Mt. Res. Sta.	300,5-10-10 Drill	Atrazine	150	40"	May 19	Nov. 18
J. R. Edwards	350,10-20-20 In Row		liq. nit.			
Area III						
Fred J. Brandon	700,10-10-10 Drill	Atrazine	150	40"	May 5	Oct. 13
Yadkin County	150,10-20-20 In Row		ammon. nit.			
Raymond Braxton	350,10-20-20	Atrazine	175	40"	April 27	Oct. 12
Alamance County			liq. nit.			
Zeb Pate	350,10-20-20	Atrazine	175	40"	April 19	Test discarded
Anson County			liq. nit.			
Dewey Hunsucker	350,10-20-20	Atrazine	175	40"	April 28	Test discarded
Catawba			liq. nit.			
Area IV						
Border Belt Res. Sta.	700,5-10-10			40"	April 6	Sept. 27
Wallace Dickens			150			
Columbus County			liq. nit.			
C. L. Humphrey	350,10-20-20	Atrazine	175	40"	April 18	Sept. 28
Craven County			liq. nit.			
Donnie Saunders	700,5-10-10 Drill	Atrazine	175	40"	April 18	Sept. 29
Johnston County	100,10-20-20 In Row		liq. nit.			
Klyne Lowery	700,5-10-10 Drill	Atrazine	---	40"	April 7	Test discarded
Robeson County	100,10-20-20 In Row					
Area V						
J. C. Long	350,10-20-20	Atrazine	175	40"	April 21	Sept. 30
Northampton County			liq. nit.			
C.X. James	300, 10-20-20	Atrazine	175	40"	April 12	Sept. 12
Pitt County			liq. nit.			
Cooper E. Smith	350,10-20-20	Atrazine	175	40"	April 14	Oct. 3
Nash County			liq. nit.			
Area VI						
Tidewater Res. Sta.	300,10-20-20	Atrazine	150	40"	April 12	Sept. 7
J. W. Smith, Washington County			liq. nit.			
Robert L. Bunch	700,5-10-10 Drill	Atrazine	175	40"	April 13	Sept. 6
Chowan County	100,10-20-20 In Row		liq. nit.			
Charles Moore	850,5-10-10 Drill	Atrazine	175	40"	April 13	Sept. 7
Pasquotank County	100,10-20-20 In Row		liq. nit.			

[1/] Top dressed with liquid nitrogen and 14 oz./A of 2,4-D. When needed 1 1/4 lbs. of lorox or 1 lb/A Atrazine was used at layby to control grass.

Seasonal Conditions

The 1966 growing season in North Carolina was generally unfavorable for the production of corn with the state average yield decreasing from a high of 71 bushels per acre in 1965 to 41.0 bushels per acre in 1966. Fair moisture conditions existed at most locations at planting time, and a good stand was obtained at all locations.

The Ashe and Haywood County tests were planted in bottom land and the season was average for corn production.

In the Piedmont area two locations (Catawba and Anson) were not harvested because of extreme dry weather. The test at Yadkin was grown under fair moisture conditions but at pollination time temperatures of close to 100°F resulted in poor seed set on most entries. This is reflected in low plot yields, although the corn plants formed good ears and had good visual growth. The Alamance test was in an isolated area which received rainfall but the surrounding farm areas were heavily damaged from lack of moisture. Individual location data for Yadkin and Alamance are published along with combined data for these two locations.

In the Southern Coastal Plain area the Robeson County test was lost due to flooding before topdressing time. Water from early rains filled up the adjoining canal and flooded the test location. The other three locations (Columbus, Johnston and Craven) had below average yields. The Johnston test is an example of yield according to maturity depending upon time of rainfall. Both Craven and Columbus tests received fair rainfall but not sufficient enough for high yields. The mean of the test for Area IV was considerably below 1965.

Dry weather in the Northern Coastal Plain full season locations decreased yields at Nash, Pitt and Northampton tests over previous years. The Nash County test was located on sandy soil which helped to explain the low mean of

this test of 56 bushels per acre. The Northampton test was on heavier soil but lack of rainfall resulted in a mean of 59 bushels per acre. The Pitt County test received somewhat more moisture with good soil and a mean of 72 bushels per acre was obtained.

Similar conditions prevailed with locations of short season tests. In the Washington County Area two tests were planted--irrigated and non-irrigated. The non-irrigated test was lost because of dry weather. In contrast the mean on the irrigated test was in excess of 130 bushels per acre. The irrigated test data is published as an individual location in the bulletin. The combined data on Chowan and Pasquotank show a lower mean in bushels per acre than in past years. This is the result of lack of moisture.

Data

Data were collected on each plot location on yield, stand, moisture, lodging, ear heignt, 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. are listed at the bottom of the various columns of the 1966 tables. Variety x locations mean squares were used to compute the L. S. D.'s. For Area III individual as well as summary data are shown for 1966. Comparison 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 and 42 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 a Tag Heppenstall 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	Per Cent of 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 not evaluated because of extreme dry weather which resulted in the discarding of these plots.

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 are outstanding in one or more characteristics may be inferior in others and should, therefore, be selected on the basis of over-all 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 1966 tests for all areas represented growing conditions in an adverse season and 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 in late August and early September. This type supplies an early (August and September) market demand, and the production of it has been limited primarily tothe northeastern counties. 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.

A preliminary test on Short Season hybrids was conducted in 1966 at the Tidewater Experiment Station to determine corn hybrids response to close spacing, high nitrogen with flood irrigation. Two row plots were planted with a plant population of 22,402 plants per acre. Three replications are averaged for yield per acre moisture percentage. Data is shown in Table No. 23. This test was conducted in cooperation with Dr. D. L. Thompson, Crop Science Department.

Table 3. Comparison of hybrids for certain characteristics

Northern Mountains Area I

Three-Year Average 1964, 1965, 1966

Average of 3 locations

Hybrid	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 310	129	98	34.20	2	56	156	30	1.8
Pioneer 345 A	126	99	28.56	8	51	130	36	2.3
DeKalb 624	117	97	28.41	2	53	133	38	1.8
Mean of Test	115	98	29.77	3	55	128	39	2.1
DeKalb 640	114	98	28.97	3	57	158	18	2.0
McNair X200	110	97	29.59	1	58	105	41	1.7
V.P.I. 648	106	98	30.05	1	56	112	64	1.9

Table 4. Comparison of hybrids for certain characteristics

Southern Mountains Area II

Three Year Average 1964, 1965, 1966

Hybrid	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 310	116	93	23.74	7	47	120	20	2.2
McNair X200	104	87	21.87	9	47	101	34	2.8
McCurdy M97	104	90	24.52	18	47	116	14	2.2
Mean of Test	103	90	23.14	8	45	113	29	2.5
V.P.I. 648	98	85	23.10	7	44	106	45	2.4

Table 5. Comparison of hybrids for certain characteristics

Piedmont Area III

Three Year Average 1964, 1965, 1966

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					
Pioneer 3048	88	90	22.61	5	48	131	3	2.1
Dixie 82	87	87	21.42	15	54	149	3	1.9
P-A-G 751	86	89	22.67	12	51	153	2	1.8
SC 236	86	89	21.90	4	50	139	1	1.4
Pioneer 309-B	85	91	20.96	8	44	133	4	1.8
DeKalb 1055	83	93	22.32	9	47	138	3	1.8
Wagwood 200A	80	90	21.00	6	47	131	3	1.5
NC 270	80	88	23.78	6	50	127	3	1.8
NC 27	79	87	21.03	17	52	138	4	1.7
DeKalb 1006	79	93	19.80	9	49	116	8	2.0
Wagwood 200	78	88	21.53	7	45	132	3	1.9
MCCurdy M97	78	91	19.48	12	47	113	11	2.1
Mean of Test	77	89	20.75	8	46	124	10	2.1
V.P.I. 648	61	90	19.91	6	40	102	26	2.6
McNair X200	59	91	18.45	9	42	100	28	3.0
			White Entries					
Dixie 29	85	87	21.34	13	50	145	5	1.4
Coker 911	85	90	21.35	9	50	148	4	1.5
McNair 425	83	87	21.91	12	49	151	4	1.7
DeKalb XL 390	77	94	20.64	8	42	107	13	1.6

Table 6. Comparison of hybrids for certain characteristics

Southern Coastal Plain Area IV

Three Year Average 1964, 1965, 1966

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 3048	102	94	18.50	20	45	125	5	2.4
P-A-G 751	101	92	18.75	16	48	149	2	2.1
McCurdy M306	101	92	19.11	20	51	150	2	2.3
DeKalb 1055	100	97	18.55	19	46	137	5	1.9
Wagwood 200	100	91	18.95	24	43	141	3	2.2
Pioneer 309B	99	95	18.15	22	42	132	6	2.3
Coker 67	99	96	18.48	13	49	148	2	1.9
S.C. 236	97	94	18.99	6	47	131	1	1.8
DeKalb 1213	96	97	18.27	15	49	128	3	2.2
Coker 71	95	94	18.99	12	48	144	3	1.9
Dixie 82	95	93	18.96	27	51	132	2	2.6
Mean of Test	95	95	18.88	19	45	130	5	2.2
Greenwood 471	94	93	18.96	17	48	134	1	1.9
N. C. 270	93	95	20.84	19	49	119	2	2.3
Speight D-14	91	94	18.84	16	42	119	2	2.1
Dixie 18	91	90	19.66	15	55	133	1	1.7
N.C. 27	91	95	17.89	29	49	126	4	2.3
			White Entries					
Coker 911	101	96	18.11	20	48	135	3	2.0
McNair 425	101	96	18.67	21	46	141	3	1.9
Coker 811A	96	94	19.21	14	45	145	1	1.9
Dixie 29	93	92	18.12	28	45	136	3	2.4

Table 7. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area V

Three Year Average - Full Season - 1964, 1965, 1966

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					
Pioneer 3048	88	95	24.19	7	46	113	5	1.9
McCurdy M306	87	95	24.18	7	52	126	1	1.9
P-A-G 751	85	95	24.80	7	46	125	5	1.9
Pioneer 309B	85	96	22.68	8	42	112	9	1.7
Dixie 82	85	95	24.18	9	53	114	5	2.1
S.C. 236	82	96	24.51	6	49	116	4	1.7
DeKalb 1055	81	96	23.74	7	46	117	7	1.9
Mean of Test	81	95	23.45	8	45	113	9	1.9
N.C. 270	80	96	25.64	9	47	107	6	1.8
			White Entries					
Coker 911	89	96	23.12	9	47	126	8	1.6
Dixie 29	80	92	22.51	16	45	120	6	1.8

Table 8. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area V

Three Year Average Short Season - 1964, 1965, 1966

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 3306	115	94	21.77	6	41	103	24	1.7
P-A-G SX63	111	93	22.20	10	41	105	40	1.8
McCurdy M97	111	92	23.78	15	47	106	14	1.6
P-A-G SX29	107	93	22.47	5	40	101	36	2.0
Pioneer 310	105	91	23.90	6	41	103	20	1.9
Watson 430	104	94	24.62	4	41	99	16	2.0
P-A-G SX59	103	93	23.69	8	41	99	22	2.0
Watson 401-A	95	90	24.94	7	41	98	21	1.9
Mean of Test	94	93	22.71	10	40	100	24	2.0
Hofmeyer's H-505	89	90	21.31	12	37	101	26	2.2
Hofmeyer H-55	88	94	22.14	9	41	96	27	2.1
McNair X200	81	90	22.18	11	40	93	25	2.2
V.P.I. 648	81	92	23.48	11	41	95	42	1.9
			White Entries					
Pioneer 509	96	93	23.34	19	44	101	23	1.7
McNair 225	90	90	23.10	13	41	97	14	1.7

Table 9. Comparison of hybrids for certain characteristics

Northern Mountains - Area I

Two-Year Average 1965, 1966

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 310	124	98	33.00	3	56	150	28	2.2
Pioneer 345A	122	100	27.28	9	53	128	32	2.6
Coker 12	116	100	28.94	2	60	158	30	2.4
DeKalb 624	115	99	26.78	4	54	131	32	1.6
McNair X202	115	98	29.54	0	58	114	6	1.9
McCurdy 7 X 11	112	98	27.78	1	56	112	22	1.4
Mean of Test	112	99	28.40	3	56	124	34	2.2
DeKalb 640	108	98	27.22	2	58	146	10	2.1
McNair X200	106	98	28.54	2	59	104	32	1.6
V.P.I. 648	101	98	29.19	2	58	110	60	2.2
			Experimental Hybrids					
			Yellow Entries					
AA 806	122	98	30.76	0	66	135	26	2.8

Table 10. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Two Year Average - 1965, 1966

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 3306	116	91	22.84	4	46	116	8	2.2
McNair X202	108	95	23.86	9	50	104	10	2.2
Pioneer 310	106	92	25.54	10	50	114	19	2.4
DeKalb XL-385	98	86	22.92	2	52	110	10	2.2
McNair X200	97	86	23.16	14	50	98	34	3.2
Mean of Test	97	90	24.46	11	48	108	26	2.5
Wagwood 400	94	82	21.91	12	48	106	44	2.4
McNair 340V	94	94	29.74	16	52	124	10	2.2
V.P.I. 648	91	84	24.17	10	48	104	51	2.4
McCurdy M97	91	88	26.00	27	49	110	7	2.1
Coker 12	90	84	25.97	25	46	119	38	2.9
			White Entries					
DeKalb 999	97	90	25.35	6	49	112	17	1.7
			Experimental Hybrids					
			Yellow Entries					
AA 622	104	96	23.96	9	50	113	44	3.2

Table 11. Comparison of hybrids for certain characteristics

Piedmont Area III

Two Year Average 1965-1966

Average of 6 locations

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Dixie 82	82	84	22.13	11	54	150	4	1.6
Pioneer 3059	80	92	21.50	4	46	136	7	1.8
Pioneer 3048	78	88	24.00	2	47	132	4	1.9
Pioneer 309B	78	90	21.64	4	44	131	4	1.8
S.C. 236	78	90	23.24	3	50	138	2	1.4
DeKalb 1055	78	92	23.52	5	48	140	4	1.8
Coker 52	76	90	22.14	1	44	138	4	1.6
P-A-G 751	74	90	24.00	6	50	150	2	1.6
DeKalb 1006	73	92	20.67	4	50	114	8	2.0
N.C. 270	72	86	24.72	4	50	127	4	1.7
Wagwood 200A	71	89	22.02	4	47	132	2	1.4
McCurdy M97	70	90	20.52	6	46	113	8	1.8
Mean of Test	70	88	21.66	4	46	124	12	2.0
N.C. 27	68	84	22.08	10	52	138	4	1.7
Wagwood 200	65	85	22.27	2	44	130	4	1.9
Pennington 9-P-3	61	82	20.28	6	48	104	14	2.6
McNair X200	58	92	19.24	6	42	96	32	3.0
V.P.I. 648	57	90	21.13	6	40	99	28	2.6
			White Entries					
Coker 911	75	90	22.28	6	51	152	2	1.4
Dixie 29	74	84	22.30	9	50	140	5	1.2
McNair 425	74	86	22.98	8	50	152	4	1.6
DeKalb XL 390	72	94	21.74	6	42	106	13	1.7

Table 12. Comparison of hybrids for certain characteristics

Southern Coastal Plain Area IV

Two Year Average 1965-1966

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	102	98	19.28	2	43	147	4	2.0
Edmund 1	94	96	19.35	8	40	132	2	2.2
McCurdy M306	92	94	20.04	5	52	152	2	2.0
DeKalb 1055	92	98	19.10	8	45	138	6	1.9
Pioneer 3048	90	95	19.26	8	44	124	6	2.2
P-A-G 751	90	92	19.60	5	48	154	3	2.1
Wagwood 200	90	90	19.46	14	42	142	4	2.1
Pennington 7-C-11A	90	95	20.18	2	52	146	2	1.7
Coker 67	88	97	18.98	2	49	145	2	1.8
Pennington 7-C-11C	87	97	20.28	4	51	136	2	1.6
Pioneer 309B	86	96	18.91	14	40	132	7	2.4
Greenwood 471	86	94	19.31	6	48	134	2	1.9
Dixie 18	86	94	20.60	6	56	134	2	1.8
Coker 74	86	96	20.87	2	44	138	6	1.9
Coker 71	85	94	19.47	2	48	142	4	1.8
Coker 52	85	98	18.52	4	40	136	3	1.7
S. C. 236	84	94	19.78	2	47	132	2	1.8
DeKalb 1213	84	98	19.20	4	48	126	4	2.1
Dixie 82	84	96	19.59	12	51	127	4	2.3
Mean of Test	84	96	19.47	8	44	129	6	2.2
Greenwood 61	84	95	19.46	2	46	136	2	2.0
N.C. 270	82	97	21.45	6	50	118	2	2.2
Speight D-14	82	95	19.38	3	42	120	3	2.1
N.C. 27	79	96	18.62	10	48	124	4	2.1
McNair 304A	79	92	18.46	10	38	121	6	2.2
			White Entries					
McNair 425	91	97	19.40	6	46	143	4	1.8
Coker 911	88	96	18.90	4	48	134	4	1.8
Coker 811A	84	94	19.84	2	44	144	2	1.9
Dixie 29	84	92	18.54	12	44	134	4	2.2

Table 13. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V

Two Year Average Full Season 1965-1966

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					
McCurdy M303	88	96	25.13	2	53	136	2	2.0
Pioneer 3048	86	95	24.54	0	47	116	6	2.0
McCurdy M306	85	96	24.54	2	54	131	0	2.2
Pioneer 309B	84	97	22.90	2	44	115	10	1.9
P-A-G 751	84	95	25.08	2	48	128	4	2.0
Dixie 82	82	95	24.65	2	56	117	4	2.3
Pennington 7-C-11A	82	97	25.72	2	56	118	4	1.8
DeKalb 1055	82	96	23.84	1	48	121	7	2.0
Pioneer 3059	82	96	23.33	2	44	118	14	2.0
Coker 52	80	98	23.12	1	42	121	6	1.6
Mean of Test	80	96	23.60	2	46	116	9	2.1
McNair 340V	79	95	23.91	1	44	110	26	2.1
N.C. 270	76	98	25.72	2	50	107	3	2.1
McNair 304A	76	94	22.15	4	43	110	6	2.0
Pennington 7-C-11C	76	96	25.67	0	57	118	4	1.9
S.C. 236	76	96	24.99	0	50	119	2	2.0
			White Entries					
Coker 911	87	96	23.42	2	49	130	7	1.9
Pioneer 511	86	96	22.05	4	46	128	7	1.8
Dixie 29	76	92	22.78	4	47	122	5	2.1

Table 14. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V

Two Year Average Short Season 1965, 1966

Average of 5 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	110	96	21.76	7	44	104	25	1.7
P-A-G SX63	106	92	21.40	13	42	105	46	1.8
McCurdy M97	106	92	23.52	16	48	107	16	1.6
P-A-G SX29	100	92	21.93	6	42	102	41	2.1
P-A-G SX59	100	94	23.55	8	44	98	21	2.2
DeKalb XL-385	100	94	22.97	6	46	104	14	2.0
Pioneer 310	99	90	23.08	6	43	105	24	2.2
McNair X202	95	93	22.72	6	43	98	22	2.0
Watson 430	94	92	24.46	3	42	100	20	2.2
Speight D-20	94	94	24.20	16	43	114	18	1.6
Mean of Test	93	93	22.33	10	42	102	26	2.1
Coker 12	91	94	22.90	18	44	106	37	2.2
Hofmeyer H-55	90	94	21.88	10	42	96	28	2.2
Watson 401A	88	89	25.06	6	42	97	20	2.0
Hofmeyer's H-505	86	89	20.88	14	40	102	27	2.4
DeKalb XL346	86	94	21.13	7	32	102	36	2.2
McNair X200	84	91	21.78	12	42	94	23	2.4
V.P.I. 648	84	93	23.31	10	43	96	44	2.0
Wagwood 400	83	87	21.21	10	45	98	30	2.4
McNair 198	81	90	21.12	6	39	99	24	2.5
Hofmeyer's H-404	80	90	20.04	12	36	103	25	2.2
			White Entries					
Pioneer 509	96	94	22.86	16	46	103	28	2.0
McNair 225	87	89	22.57	9	43	96	17	2.0

Table 15. Comparison of hybrids for certain characteristics

Northern Mountains Area I

Ashe County 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	125	100	33.16	0	57	153	41	1.9
Hollyview 260	119	99	31.31	1	60	143	47	2.4
Pioneer 345A	115	100	29.29	1	54	115	47	2.1
Pioneer 310	112	98	34.87	0	57	123	43	2.1
DeKalb 624	112	100	29.13	2	55	131	40	1.5
DeKalb XL-65A	108	99	29.19	2	54	125	60	1.6
Coker 12	107	100	29.85	1	60	153	35	2.1
McCurdy 3 X 6	107	99	28.81	2	54	108	69	1.8
T-E E20YA	107	100	29.61	2	55	116	47	2.0
DeKalb 805A	106	97	30.29	0	58	98	13	1.7
T-E E20YB	104	99	29.89	0	57	115	44	2.0
Mean of Test	104	99	30.15	2	56	120	42	1.9
McCurdy 7 X 11	103	98	29.40	0	56	116	23	1.4
McCurdy 7 X 11E	102	100	28.54	0	52	110	51	2.2
McNair X202	102	96	29.67	0	58	107	7	1.5
DeKalb XL-342	101	99	28.51	3	53	128	51	2.4
T-E Cropmaster	99	99	29.70	4	59	123	29	1.7
Wagwood 400	97	98	29.90	2	58	105	34	1.5
DeKalb 640	97	98	29.83	2	57	140	10	1.7
McNair X200	96	96	30.65	2	59	98	41	1.3
T-E SX20Y	95	96	30.97	3	57	106	30	1.9
DeKalb XL-346	90	98	28.12	1	46	112	74	2.0
V.P.I. 648	87	98	30.73	1	57	102	73	2.2
			Experimental Hybrids Yellow Entries					
AA 1243	109	100	29.83	2	56	136	62	1.9
AA 806	108	98	32.38	0	65	126	24	2.5
AA 1589	102	98	30.12	0	54	110	59	1.8
L.S.D. (.05)	10	2	1.23	3	3	17	13	.7
(.01)	13	3	1.63	4	4	23	17	.9
C.V. (%)	8	2	4	163	5	12	27	30

Table 16. Comparison of hybrids for certain characteristics

Southern Mountains Area II

Haywood County 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
			Commercial Hybrids Yellow Entries					
Pioneer 3306	139	92	25.90	5	50	126	38	2.0
McNair X202	135	91	27.36	9	53	121	8	1.7
McCurdy 49 X 3	133	91	24.14	31	53	137	33	2.2
Pioneer 310	133	93	29.24	21	57	139	28	2.0
T-E Cropmaster	130	96	26.52	16	51	118	31	2.0
V.P.I. 648	129	96	27.24	18	54	124	62	2.2
DeKalb 805A	128	94	25.47	18	53	109	23	2.0
McNair X200	128	94	26.21	26	57	116	41	2.5
Mean of Test	126	94	27.20	19	54	126	34	2.1
DeKalb XL-65A	125	96	26.28	18	47	130	46	2.0
T-E SX20Y	125	90	26.47	8	56	108	50	2.0
DeKalb XL-385	123	94	26.22	4	57	120	2	2.0
Pioneer 3369	120	96	24.38	19	48	113	31	1.8
McCurdy M97	118	92	29.03	48	55	133	10	2.5
Wagwood 400	118	95	25.54	23	55	112	44	2.0
McNair 340V	118	88	31.42	30	55	154	14	2.2
T-E E20YA	117	94	26.70	21	51	108	35	2.0
Coker 12	115	89	28.04	43	52	137	49	2.8
DeKalb 872	112	94	27.15	22	53	128	45	2.4
			White Entries					
DeKalb XL-390	132	96	31.67	27	58	133	28	2.1
DeKalb 999	130	93	29.30	9	53	132	25	1.7
			Experimental Hybrids Yellow Entries					
DeKalb 609	134	98	29.10	11	54	133	40	2.0
AA 1243	133	94	26.11	11	55	130	62	2.2
AA 622	124	94	27.31	18	56	135	37	2.5
AA 869	122	96	24.93	8	52	124	34	2.0
NC 4025	118	95	28.23	10	54	141	32	1.8
L.S.D. (.05)	16	8	1.98	21	4	23	10	.6
(.01)	21	11	2.62	28	6	31	13	.7
C.V. (%)	11	8	6	96	7	16	25	23

Table 17. Comparison of hybrids for certain characteristics

Piedmont - Area III

Combined over Yadkin and Alamance Counties 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
McCurdy M306	76	87	24.66	5	62	171	0	1.2
Pioneer 3059	67	92	23.40	4	53	120	9	1.9
Dixie 82	66	84	23.53	12	61	144	5	1.6
	65	91	26.30	4	58	125	1	1.5
McNair 440V	65	92	25.55	2	49	125	5	1.5
Pioneer 309B	64	92	24.49	2	49	118	2	1.8
DeKalb 1055	63	92	26.51	4	52	126	2	1.8
McCurdy M97	63	89	23.92	5	54	112	10	1.9
DeKalb 1006	61	92	23.09	4	56	114	8	2.4
Pioneer 3048	61	91	27.20	2	51	122	4	2.1
DeKalb 872	60	92	21.54	2	47	104	21	2.2
Pioneer 3009	60	92	24.70	5	53	113	1	2.4
Coker 52	58	89	24.47	0	49	126	4	1.8
DeKalb 805A	57	89	22.16	9	48	96	34	3.4
Mean of Test	57	89	24.33	5	52	118	13	2.1
Wagwood 200A	56	89	24.57	3	52	121	2	1.5
P-A-G 751	55	89	27.30	8	53	129	2	1.6
N.C. 27	53	85	24.78	11	57	124	5	1.8
N.C. 270	51	88	27.48	4	56	118	4	1.8
Taylor 88	51	85	26.86	2	58	121	2	2.2
T-E SX20Y	51	90	21.66	16	50	97	39	2.9
McNair 340V-1965	50	89	25.24	3	48	111	14	1.8
T-E E20YA	48	89	21.46	2	43	99	39	2.2
McNair X202	47	98	22.97	7	48	89	33	3.1
McNair X200	45	92	21.73	7	48	89	46	3.5
T-E Cropmaster	45	88	21.97	6	49	90	40	3.1
V.P.I. 648	43	94	24.12	8	44	92	27	2.8
Pennington 9-P-3	41	77	21.95	10	51	92	21	2.8
Wagwood 200	37	81	24.70	2	49	101	6	1.9
Pioneer 3567	33	91	22.12	5	36	100	40	3.8
White Entries								
DeKalb 1101	85	90	24.54	2	60	168	1	1.2
Pioneer 511	77	91	22.65	6	53	147	4	1.5
CHR-W	64	92	25.11	3	57	128	4	1.5
Coker 911	61	90	24.79	5	58	144	1	1.6
Dixie 29	61	83	25.37	7	57	130	6	1.1
McNair 425	60	89	25.62	9	57	146	3	1.9
DeKalb XL-390	56	96	24.72	7	47	96	16	1.8
Experimental Hybrids								
Yellow Entries								
Pennington 9-P-3A	68	90	24.75	10	63	135	6	2.0
NC 6019	64	93	24.91	6	54	120	3	1.5
McNair 6518 (340V)	64	93	26.21	2	50	113	9	1.6
NC 5027	57	90	24.45	2	47	113	4	1.6
NC 6015	51	84	26.60	5	51	112	10	1.5
McNair 6601	39	87	21.70	9	38	108	39	3.5
L.S.D. (.05)	25	9	3.06	8	5	23	12	1.1
(.01)	34	12	4.08	10	6	30	16	1.5
C.V. (%)	22	5	6	71	4	10	47	28

Table 18. Comparison of hybrids for certain characteristics

Piedmont - Area III

Alamance County 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
DeKalb 1055	96	90	19.48	6	46	146	4	1.2
McCurdy M306	93	83	19.58	10	59	160	0	1.2
McNair 440V	91	89	18.48	3	43	151	6	1.0
S.C. 236	88	93	19.05	5	55	126	1	1.2
Pioneer 3059	87	89	19.14	8	44	140	9	1.6
P-A-G 751	86	83	19.46	12	47	135	3	1.0
Pioneer 309B	82	92	18.82	4	43	136	4	1.5
Pioneer 3048	82	88	20.34	4	45	133	5	1.8
Dixie 82	81	78	19.05	23	59	156	2	1.5
Coker 52	81	83	19.86	1	42	150	5	1.2
DeKalb 1006	80	90	18.56	6	49	122	4	2.2
Wagwood 200A	79	84	19.87	6	47	138	1	1.0
N.C. 270	78	84	21.05	5	52	138	7	1.2
Pioneer 3009	76	88	20.28	11	44	127	2	2.0
McCurdy M97	74	86	18.71	9	47	127	8	2.5
Mean of Test	74	86	19.01	10	46	131	15	2.0
McNair 340V - 1965	71	83	19.98	7	42	141	18	1.5
Taylor 88	71	79	19.85	4	52	124	3	2.2
DeKalb 805A	71	91	17.34	12	44	105	39	3.8
N.C. 27	68	74	18.40	17	50	138	10	1.8
DeKalb 872	67	91	17.38	5	41	104	30	3.0
McNair X202	58	98	18.28	12	42	104	43	3.5
T-E E20YA	58	91	17.37	4	37	92	43	3.0
T-E SX20Y	58	85	17.72	27	44	108	39	3.2
T-E Cropmaster	53	85	17.46	7	43	106	42	3.8
Wagwood 200	52	75	19.54	4	42	105	10	1.8
V.P.I. 648	52	92	19.52	14	39	108	43	3.0
Pennington 9-P-3	48	70	18.04	19	43	109	34	3.0
McNair X-200	47	91	17.45	14	40	97	58	3.8
Pioneer 3567	30	90	17.34	8	30	107	46	4.0
White Entries								
DeKalb 1101	121	87	18.48	4	56	178	2	1.0
Pioneer 511	94	87	18.57	12	47	170	2	1.5
McNair 425	87	83	20.05	16	51	170	3	1.2
CHR-W	80	88	19.40	6	52	146	5	1.0
Coker 911	77	85	20.72	11	53	168	2	1.5
DeKalb XL-390	75	96	19.08	9	42	108	12	1.2
Dixie 29	68	70	19.38	14	49	140	8	1.0
Experimental Hybrids								
Yellow Entries								
NC 6019	97	92	19.77	11	51	137	3	1.2
Pennington 9-P-3A	88	84	20.08	18	55	149	9	2.0
McNair 6518 (340V)	82	92	19.72	3	44	126	12	2.0
NC 5027	74	84	20.00	4	39	133	5	1.0
NC 6015	73	81	19.96	10	47	128	8	1.0
McNair 6601	38	81	15.98	16	32	116	41	4.0
L.S.D. (.05)	19	12	1.52	10	6	24	15	.7
(.01)	26	16	2.01	14	8	31	20	.9
C.V. (%)	19	10	6	76	10	13	71	23

Table 19. Comparison of hybrids for certain characteristics

Piedmont Area III

Yadkin County - 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids Yellow Entries								
McCurdy M306	60	90	29.73	0	66	182	0	1.2
DeKalb 872	53	92	25.71	0	53	104	12	1.5
McCurdy M97	52	92	29.12	1	62	97	12	1.2
Dixie 82	51	90	28.02	0	63	132	8	1.8
Pioneer 3059	47	94	27.67	0	62	99	8	2.0
Pioneer 309B	46	92	30.15	0	55	99	1	2.0
McNair X200	44	93	26.01	0	55	81	35	3.2
Pioneer 3009	44	96	29.12	0	62	100	0	2.8
T-E SX20Y	44	95	25.60	5	56	85	40	2.5
S.C. 236	42	89	33.56	2	60	123	0	1.8
DeKalb 805A	42	88	26.98	6	53	86	29	3.0
DeKalb 1006	42	95	27.62	2	63	105	11	2.5
Mean of Test	40	93	29.64	1	58	104	10	2.1
Pioneer 3048	40	95	34.05	0	58	112	2	2.5
McNair 440V	39	94	32.61	0	56	99	4	2.0
N.C. '27	38	96	31.16	5	65	111	0	1.8
T-E E20YA	38	88	25.54	0	50	86	36	1.5
T-E Cropmaster	37	92	26.48	4	55	74	38	2.5
McNair X202	36	98	27.66	2	54	74	22	2.8
Coker 52	36	96	29.08	0	56	103	2	2.2
Pioneer 3567	35	93	26.90	2	41	93	34	3.5
V.P.I. 648	34	96	28.72	2	50	77	11	2.5
Pennington 9-P-3	34	85	25.85	2	59	75	9	2.5
Wagwood 200A	33	94	29.27	0	57	104	2	2.0
Taylor 88	30	91	33.88	0	65	118	2	2.2
DeKalb 1055	30	94	33.54	2	59	106	0	2.2
McNair 340V- 1965	29	96	30.50	0	54	80	10	2.0
N.C. 270	24	92	33.91	4	61	98	1	2.2
P-A-G 751	23	95	35.15	3	59	122	1	2.2
Wagwood 200	23	86	29.85	0	56	97	2	2.0
White Entries								
Pioneer 511	61	95	26.72	1	58	125	6	1.5
Dixie 29	53	96	31.36	0	64	121	4	1.2
DeKalb 1101	50	93	30.60	0	63	158	0	1.5
CHR-W	49	96	30.81	0	61	110	3	2.0
Coker 911	44	94	28.86	0	63	120	0	1.8
DeKalb XL-390	37	96	30.36	4	51	85	20	2.2
McNair 425	34	94	31.19	1	62	121	3	2.5
Experimental Hybrids Yellow Entries								
Pennington 9-P-3A	48	96	29.42	1	71	121	3	2.0
McNair 6518 (340V)	45	93	32.70	0	55	100	7	1.2
McNair 6601	41	93	27.42	2	43	99	37	3.0
NC 5027	40	96	28.89	0	55	92	2	2.2
NC 6019	31	95	30.06	2	58	102	4	1.8
NC 6015	29	88	33.24	0	54	96	11	2.0
L.S.D. (.05)	13	6	4.05	5	5	18	15	1.0
(.01)	17	8	5.36	7	7	15	20	1.3
C.V. (%)	23	5	10	306	6	13	105	33

Table 20. Comparison of hybrids for certain characteristics

Southern Coastal Plain - Area IV

Craven, Columbus and Johnston Counties - 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging[1] %	Ear Height[1] Inches	Ears/100 Stalks	Ear Tips Exposed[1] %	Quality
Commercial Hybrids								
Yellow Entries								
McNair 440V	103	98	18.00	3	45	145	2	1.9
Pioneer 3059	88	96	18.61	21	44	133	7	2.7
McCurdy M307	85	95	19.22	7	53	128	1	2.0
Pennington 7-C-11A	84	94	19.03	3	53	139	2	1.8
Florida 200A	84	97	18.81	5	53	127	1	1.9
DeKalb 1213	84	98	18.69	6	48	123	1	1.8
McCurdy M306	82	93	19.29	9	52	138	2	2.3
Dixie 18	82	94	20.00	10	58	124	0	1.8
Pioneer 309B	81	95	18.57	25	42	131	6	2.5
DeKalb 1055	81	98	18.66	15	46	129	3	2.0
Coker 52	81	98	17.97	8	40	130	3	1.8
Pioneer 3048	80	95	18.47	14	44	117	4	2.5
Coker 74	80	95	19.92	4	44	131	3	1.9
Edmund I	80	94	18.32	15	42	120	1	2.2
Speight D-20	79	97	16.90	18	40	127	8	2.3
S. C. 236	79	92	19.43	4	48	124	2	2.1
Coker 67	79	96	17.97	3	49	140	1	1.8
P-A-G 751	79	91	18.83	8	46	140	1	2.1
Coker 71	79	94	18.78	4	47	134	2	2.0
Greenwood 61	79	95	18.87	4	46	130	1	2.3
Speight D-14	78	94	18.27	4	41	112	1	2.1
Pennington 7-C-11C	78	96	19.51	7	51	125	2	1.8
McNair 304A	78	95	17.48	15	39	113	3	2.2
Mean of Test	76	95	18.56	15	44	121	5	2.3
Greenwood 471	75	94	18.14	9	47	119	1	2.2
McNair 340V - 1965	75	98	19.05	8	41	111	13	2.3
Wagwood 200	74	84	18.39	17	42	140	1	2.0
Taylor 88	74	94	18.66	4	47	109	1	2.2
Dixie 82	73	94	18.85	20	52	122	3	2.5
N.C. 270	72	97	19.93	10	50	106	2	2.1
Asgrow 116	68	95	17.45	15	41	102	20	3.1
N.C. 27	68	96	18.14	19	49	112	3	2.3
Asgrow 202	67	93	17.33	26	42	109	2	3.1
Asgrow ASC 95	66	96	16.85	35	39	98	14	3.7
Asgrow 110	65	93	16.92	30	34	107	16	3.2
Edmund 211	61	99	17.53	30	36	100	9	3.7
Asgrow 120	60	98	17.13	17	35	100	16	3.3
Speight D-22	60	96	18.31	23	37	110	3	2.3
Asgrow 100	54	96	17.53	44	34	103	15	3.4
Todd 92-B	52	90	17.12	36	34	94	6	3.5
White Entries								
DeKalb 1101	85	96	18.21	13	47	143	0	2.3
McNair 425	85	96	19.17	12	47	142	2	1.9
Coker 911	81	97	18.53	8	47	121	4	2.0
Pioneer 511	78	92	17.47	30	41	130	4	2.5
CHR-W	78	93	18.76	19	49	120	2	2.1
Coker 811A	74	93	19.51	4	44	132	2	2.2
Dixie 29	72	90	17.94	21	43	129	2	2.4
Experimental Hybrids								
Yellow Entries								
NC 4003	98	97	20.78	18	46	122	2	2.1
NC 6009	89	99	18.54	16	43	114	3	2.3
NC 1057	85	97	19.19	4	47	128	4	2.1
NC 6002	84	98	19.61	24	42	115	6	1.8
McNair 6518 (340V)	83	96	18.84	10	42	115	14	2.1
NC 6037	80	97	20.85	10	45	106	3	2.5
Greenwood 6471	74	98	19.46	7	46	120	3	2.1
Excel 112	72	96	18.56	11	40	112	2	1.8
Edmund's 3392A	72	95	18.34	13	41	121	1	2.6
McNair 6601	35	95	18.41	65	26	103	66	3.5
L.S.D. (.05)	14	5	1.19	15	4	12	9	.4
(.01)	19	6	1.58	20	5	17	12	.6
C.V. (%)	11	3	4	49	5	6	81	12

[1] Average of Columbus and Johnston Counties only.

Table 21. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V

Nash, Pitt and Northampton Counties - Full Season Test 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
Pennington 7-C-11A	71	98	26.07	1	59	104	4	2.2
McNair 440V	70	99	24.26	1	49	111	7	1.9
McCurdy M303	69	96	26.22	1	54	119	2	2.2
Pioneer 3048	68	94	26.21	0	46	110	4	2.2
Pioneer 309B	67	98	24.66	0	45	104	8	2.3
McCurdy M306	67	96	25.45	1	55	108	0	2.6
McNair 340V - 1965	65	97	25.14	1	44	98	21	2.4
DeKalb 1212	64	99	24.52	1	53	105	2	2.0
McNair 304A	64	95	23.06	3	43	100	3	2.1
Coker 52	64	100	23.73	1	43	103	6	2.0
Pioneer 3059	63	96	24.56	2	45	102	14	2.2
Dixie 82	62	95	25.37	2	58	98	3	2.3
DeKalb 1055	62	98	24.70	1	51	103	4	2.1
Mean of Test	62	96	24.38	2	47	102	9	2.4
N.C. 270	61	98	26.29	3	52	97	1	2.4
P-A-G 751	59	93	26.69	1	48	107	2	2.0
Asgrow 116	59	100	22.51	2	42	93	14	2.8
Asgrow ASC 95	57	96	21.71	1	43	96	20	3.5
S.C. 236	57	97	25.55	1	51	100	1	2.2
Pennington 7-C-11C	57	97	26.29	0	60	99	2	2.2
Asgrow 120	57	96	21.34	6	39	97	15	3.0
Asgrow 100	56	95	21.98	10	37	97	14	3.4
Asgrow 202	56	97	21.77	2	45	95	4	2.8
Asgrow 110	53	92	23.08	1	37	95	12	2.8
White Entries								
Coker 911	69	97	24.05	1	50	116	2	2.1
Pioneer 511	69	95	23.81	4	48	116	5	2.0
McNair 425	68	97	24.70	3	50	111	5	2.2
CHR-W	60	98	26.09	2	49	93	11	2.3
Dixie 29	55	87	24.14	3	47	105	4	2.4
Experimental Hybrids								
Yellow Entries								
McNair 6518 (340V)	73	98	25.19	2	45	101	14	2.2
Pioneer X2786	71	98	22.61	3	41	101	38	3.2
NC 5027	68	98	23.70	0	40	101	6	2.1
NC 6021	63	98	24.35	1	41	94	8	2.3
DeKalb 602	63	95	25.46	0	46	100	18	2.1
NC 5034	62	98	25.34	1	51	95	2	2.7
NC 5032	57	98	25.06	0	48	90	6	2.3
McNair 6601	41	95	21.87	10	27	94	28	3.6
L.S.D. (.05)	15	5	1.82	3	4	13	8	.7
(.01)	20	6	2.42	4	5	17	11	1.0
C.V. (%)	15	3	4	96	5	8	58	18

Table 22. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area V - Short Season

Chowan and Pasquotank Counties 1966

Hybrid Designation	Yield Bus/A	Stand %	Moisture %	Lodging %	Ear Height Inches	Ears/100 Stalks	Ear Tips Exposed %	Quality
Commercial Hybrids								
Yellow Entries								
Pioneer 3376	98	96	22.31	3	36	101	36	2.1
McCurdy M97	92	95	22.94	26	46	98	9	1.9
Pioneer 3306	90	97	22.02	12	42	95	12	2.1
P-A-G SX59	88	96	22.39	12	40	94	11	2.6
DeKalb XL-362	86	98	21.80	11	37	98	31	2.8
P-A-G SX63	86	94	20.99	19	39	99	45	2.2
DeKalb XL-65A	86	94	20.78	13	36	98	14	1.8
DeKalb XL-342	83	99	21.92	9	35	102	16	2.4
P-A-G SX29	83	96	22.04	7	40	94	42	2.2
DeKalb XL-385	82	94	22.42	12	44	100	9	2.0
Watson 430	80	94	23.27	4	41	93	11	2.6
Pioneer 310	79	90	22.99	8	42	96	24	2.5
Asgrow 100	78	94	21.18	18	37	89	15	2.5
Asgrow 116	76	97	22.07	8	42	89	12	2.2
Todd 92-A	76	93	21.92	6	40	82	8	1.9
DeKalb 624	75	98	21.44	18	39	99	18	2.8
Mean of Test	75	94	22.38	13	40	94	18	2.5
Asgrow 120	74	97	20.96	16	40	95	11	2.5
Coker 12	74	94	23.06	23	43	97	36	2.5
Asgrow 202	73	92	22.55	11	44	93	10	2.6
Hofmeyer H-55	73	96	21.82	13	40	92	21	3.0
DeKalb 805A	72	94	21.32	17	39	97	14	3.2
Hofmeyer H-505	71	90	21.40	21	38	98	20	2.5
McNair X202	71	94	22.41	9	40	89	18	2.5
DeKalb XL-346	70	94	21.36	10	30	95	27	2.1
Speight D-20	68	96	23.63	21	41	95	9	1.9
Hofmeyer H-404	68	92	20.25	14	34	93	16	2.5
Speight D-21	68	94	24.33	10	40	97	2	2.2
Todd M-55	67	91	22.21	17	38	102	10	2.5
Asgrow ASC 95	67	96	22.18	9	42	86	16	2.9
McNair 198	65	92	21.50	10	38	88	12	3.1
Asgrow 110	62	93	22.77	10	38	90	12	2.9
Watson 401A	61	88	24.68	9	40	88	11	2.4
V.P.I. 648	60	94	23.28	11	41	85	35	2.4
Wagwood 400	60	94	21.48	16	42	82	15	2.9
McNair X-200	60	95	21.51	18	42	84	16	2.9
White Entries								
Pioneer 509	75	95	22.29	18	45	91	13	2.5
Hofmeyer 600W	68	96	22.09	12	38	87	13	2.0
McNair 225	60	87	22.42	11	40	87	4	2.6
Experimental Hybrids								
Yellow Entries								
McNair 6610	95	98	31.39	8	51	123	32	2.2
P-A-G 15495	87	96	23.56	7	42	97	19	2.1
McNair 6611	71	95	22.48	18	37	96	23	2.6
McNair 6612	64	95	20.85	28	26	97	18	3.4
L.S.D. (.05)	17	7	1.74	7	3	13	16	.8
(.01)	23	9	2.32	10	4	17	21	1.0
C.V. (%)	11	4	4	28	4	7	44	16

Table 23. Comparison of hybrids for certain characteristics

Tidewater Research Station 1966

Plant Population, Irrigation and Fertility Study

Entry	Yield Bu/A	Moisture %
*McNair 6610	187	27.57
P-A-G SX63	157	20.88
Pioneer 310	154	23.79
*P-A-G 15495	149	25.40
Watson 430	146	21.58
P-A-G SX59	144	22.09
Pioneer 3306	142	21.75
McCurdy M97	142	24.79
Speight D-20	141	23.06
Pioneer 3376	141	21.91
Asgrow ASC 95	139	22.58
P-A-G SX29	139	21.74
McNair X202	138	21.08
DeKalb 624	137	21.35
Hofmeyer 600W(w)	136	21.04
Coker 12	135	21.64
Asgrow 116	135	21.81
Pioneer 509(w)	134	22.44
DeKalb XL-65A	134	20.66
DeKalb XL-385	133	21.61
*McNair 6611	132	21.05
Mean of Test	132	22.58
McNair 198	131	20.95
McNair X200	130	21.18
Hofmeyer H-55	130	20.38
McNair 225(w)	130	23.47
V.P.I. 648	129	23.85
Asgrow 100	128	20.68
Asgrow 202	128	21.90
Watson 401A	128	22.99
Asgrow 120	126	20.78
Asgrow 110	126	21.28
DeKalb XL-362	125	21.28
Hofmeyer H-505	123	21.28
Speight D-21	123	24.05
Todd 92-A	122	22.31
DeKalb XL-342	120	21.62
Wagwood 400	118	20.08
DeKalb XL-346	111	21.55
*McNair 6612	111	20.78
DeKalb XL-45	110	20.09
Todd M-55	110	21.98
Hofmeyer H-404	104	21.28

*Experimentals
(w) White entries

Part II

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 1966 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 1966 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 application 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
Advance Seed Company	Phoenix, Arizona	Advance
Arkansas Agricultural Experiment Station	Fayetteville, Arkansas	AKS
Asgrow Seed Company	Atlanta, Georgia	Ranger-A, Redhead
DeKalb Agricultural Association, Inc.	Lubbock, Texas	DeKalb
Frontier Hybrids, Inc.	Scott City, Kansas	Frontier
Georgia Agricultural Experiment Station	Experiment, Georgia	Georgia
McNair Seed Company	Plainview, Texas	McNair
Northrup, King and Company	Lubbock, Texas	NK
N. C. Agricultural Experiment Station	Raleigh, N. C.	RS
Pfister Associated Growers, Inc.	Aurora, Illinois	P.A.G.
Taylor-Evans Seed Company	Tulia, Texas	T-E

Test Locations

Three locations were used in 1966 in the Piedmont as shown in Figure 1. All tests were located on private farms and two locations were considered to be good grain sorghum tests for the 1966 season.

Seasonal Conditions

The 1966 growing season was generally favorable for the production of grain sorghum. Good stands were obtained at all test locations and adequate moisture conditions existed throughout the growing season except on the Cabarrus test.

Dry weather during the season caused some variation in the flowering data and head exsertion. Varietal differences on these two characteristics are shown in the tables. All tests were uniform except the Cabarrus County test which was lost and not included in the publication. Weather was favorable for harvesting and very little lodging occurred. Late rains in the growing season caused late tillering and green material to be harvested when grain heads were

mature. This caused high moisture in the harvested samples.

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 24. 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 coated paper bags and the percent moisture determined by a Tag Heppenstall moisture meter.

Data

A randomized block design was used with four replications at each location. Plot size was two rows 27 feet long. The row width was 40 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 24. Cultural practices on grain sorghum performance trials. Piedmont - 1966.

Area and Co-operator	Fertilizer lbs/A	Herbicide 1/ Pre emerge	Top Dressing lbs/A	Row Spacing Inches	Date of Planting	Date of Harvest
Cabarrus County Ralph O. Simmons	350 10-20-20	Propozine	175 liq. nit.	40"	May 6	Sept. 15
Chatham County Russell & Eugene Johnston	1100 10-10-10	Propozine	175 liq. nit.	40"	May 9	Sept. 15
Stanly County Hal Rogers	350 10-20-20	Propozine	175 liq. nit.	40"	April 20	Sept. 23

1/ All tests were top-dressed with liquid nitrogen and 1 pint/A of 2, 4-D 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

The data presented in Tables 25, 26 and 27 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 25. Entries ranged in yield from 5448 for Dekalb F-61 to 3484 pounds per acre for Martin.

The performance of entries during the last two years in the Piedmont is shown in Table 26. Yields ranged from a high of 5454 pounds per acre for DeKalb F-61 to 3160 for Martin.

A summary of the 1966 results for the Piedmont is shown in Table 27. Yields ranged from 5964 pounds per acre for DeKalb BR-60 to 3918 for Martin. One-half of the 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 25. Performance of grain sorghum Piedmont. Three year average 1964-1965-1966. Average of 7 locations.

	Yield lbs/A	Moisture %	Days to flower	Plant height inches	Head exsertion inches
DeKalb F-61	5448	19.28	70	49	7
Ga. 615	5315	20.00	69	51	6
NK 275	5215	19.41	70	45	6
DeKalb E-57	5041	19.12	70	50	6
AKS 614	5031	19.52	68	46	5
Redhead	4983	19.61	74	51	6
Ranger A	4925	19.68	70	51	7
P-A-G 515	4861	19.64	69	49	7
T-E Grainmaster	4824	20.09	70	48	5
NK 255	4821	19.14	68	41	5
Frontier 413	4724	20.41	74	51	6
RS 610	4656	19.71	67	50	8
Mean of Test	4644	19.43	70	48	6
Advance 14	4579	17.72	66	48	8
T-E 66	4436	18.70	70	44	5
Frontier 401	4400	19.53	67	45	6
NK 222	4064	18.82	66	47	8
Martin	3484	19.48	70	45	6

Table 26. Performance of grain sorghum Piedmont. Two year average 1965-1966. Average of 5 locations.

	Yield lbs/A	Moisture %	Days to flower	Plant height inches	Head exsertion inches
DeKalb F-61	5454	19.68	72	50	8
Ga-615	5150	20.62	70	52	6
NK 275	4890	20.02	72	48	6
DeKalb E-57	4836	19.36	71	48	7
P-A-G 515	4776	20.02	70	50	7
AKS 614	4747	19.80	69	48	6
NK 255	4688	19.94	68	42	5
DeKalb F-65	4686	19.81	75	47	7
Ranger A	4584	20.20	72	50	6
T-E Grainmaster	4574	20.85	72	49	5
Frontier 413	4554	20.76	76	52	6
RS 610	4516	20.30	69	52	8
Mean of Test	4502	19.98	72	48	6
Redhead	4486	20.16	77	52	6
Frontier 401	4292	20.09	68	42	5
Rico	4290	18.71	71	45	7
T-E 66	4248	19.13	71	42	5
Advance 14	4086	18.56	68	48	8
NK 222	3928	19.60	69	44	6
Martin	3160	20.16	72	44	7

Table 27. Performance of grain sorghum for certain characteristics Piedmont. Chatham and Stanly Counties 1966.

Entry	Yield lbs/A	Moisture %	Days to flower	Plant height inches	Head exsertion inches	Head Compactness
DeKalb BR-60	5964	20.68	76	45	7	4.5
Ga. 615	5945	21.03	73	45	4	5.0
Jumbo L	5664	20.97	75	44	4	4.0
McNair 6546	5325	20.62	70	40	4	4.5
DeKalb F-61	5277	18.97	77	45	5	2.5
Amak R-12	5269	20.20	74	41	4	1.8
Savanna	5196	20.41	71	41	4	5.0
DeKalb F-65	5179	20.34	78	40	5	2.5
T-E Grainmaster	5092	21.10	72	39	2	2.2
AKS 614	5089	20.70	74	43	4	5.0
*NK X3025G	5048	20.71	78	39	5	4.0
Frontier 409	5034	20.84	76	40	5	4.2
NK 275	5031	20.74	74	40	4	3.0
RS 610	4974	21.29	72	46	6	2.0
Mean of Test	4902	20.51	75	41	4	3.2
NK 255	4900	20.84	71	36	2	2.5
DeKalb E-57	4866	18.91	75	42	5	5.0
*McNair 6542	4862	20.85	76	43	4	2.5
P-A-G 515	4833	20.10	72	43	5	2.5
Ranger A	4685	21.13	75	43	4	2.0
Rico	4588	19.86	74	40	5	2.2
Redhead	4543	20.32	80	43	5	2.8
Frontier 401	4518	20.61	72	38	3	4.0
Frontier 413	4481	21.23	79	47	4	2.2
T-E 66	4453	20.06	74	38	3	2.5
Advance 91	4314	20.19	77	40	4	3.2
Advance 14	4108	19.44	72	42	6	3.2
NK 222	4085	21.14	72	38	3	3.5
Martin	3918	20.91	74	37	4	1.2
L. S. D. (.05)	754	N.S.	4	4	N.S.	1.6
(.01)	1018	N.S.	6	5	N.S.	2.2
C. V. (%)	10	4	1	7	48	25

*Experimental

Part III

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 1966 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
Advance Seed & Grain Company	Phoenix, Arizona	Advance (Sorghum)
Asgrow Seed Company	San Antonio, Texas	Asgrow (Corn) Titan-R (Sorghum) Beefbuilder-T (Sorghum)
Coker Pedigreed Seed Company	Hartsville, S. C.	Coker (Corn)
Cotton Hybrid Research, Inc.	Athens, Georgia	Southern Cross (Sorghum)

DeKalb Agricultural Assoc., Inc.	DeKalb, Illinois	DeKalb (Corn & Sorghum)
Frontier Hybrids, Inc.	Scott City, Kansas	Frontier (Sorghum)
Hollyview Farm	Mt. Airy, N.C.	Hollyview (Corn)
McCurdy Seed Company	Fremont, Iowa	McCurdy (Corn)
McNair Seed Company	Laurinburg, N.C.	McNair (Corn & Sorghum)
N. C. Agricultural Experiment Station	Raleigh, N.C.	N. C., Sart (Corn & Sorghum) Texas Seeded Ribbon
Northrup, King and Company	Lubbock, Texas	NK (Sorghum)
Paymaster Seed Farms	Plainview, Texas	Aztec (Sorghum)
Pioneer Corn Company, Inc.	Tipton, Indiana	Pioneer (Corn & Sorghum)
S. C. Agricultural Experiment Station	Clemson, S.C.	S. C. (Corn)
Taylor-Evans Seed Company	Tulia, Texas	T-E (Corn & Sorghum)
University of Arkansas	Fayetteville, Arkansas	Leafmaster (Sorghum)
Wagwood Farms, Inc.	Gibsonville, N.C.	Wagwood (Corn)
Watson Seed Farms, Inc.	Rocky Mount, N.C.	Watson (Corn)

Test Locations

Six locations were used for corn silage--one in each of the Mountain areas, three in the Piedmont, and one 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 the Coastal Plain test of corn silage were on private farms, whereas the two Mountain tests and a Piedmont corn and sorghum silage test were on Research Stations.

SEASONAL CONDITIONS

The growing season was generally unfavorable for the production of high yields of corn and sorghum silage at most locations. With few exceptions, a good stand was obtained at all locations in both the corn and sorghum silage test. Although sorghum suffered less than corn from dry weather, the 1966 season produced sorghum yields with a mean of 11.8 tons per acre compared with 15.1 tons per acre green weight in 1965. The mean stalk height of all entries in 1966 was 70 inches compared to 102 inches as the mean for 1965. These comparisons indicate a lack of moisture for the 1966 tests.

The corn silage tests in Ashe and Haywood Counties were normal for these areas with tests being located in bottom land sites. The Cleveland County test was not harvested because of dry weather conditions. The Rowan test was a fair tests being located in low ground and receiving limited rainfall. The Alamance test was in an isolated area which received more rainfall than surrounding farm crops. The single Coastal Plain test received no rain during July resulting in barren stalks and low yields.

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 28. 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 a modified chute adapted on the rear of the ensilage cutter.

Table 28. Cultural practices on corn and sorghum silage performance trials.

Area and Co-operator	Fertilizer	Herbicide Pre emerge 1/	Top Dressing lbs/A	Row Spacing Inches	Date of Planting	Date of Harvest
		Corn Silage				
Ashe County Dana G. Tugman	800 10-20-20	Atrazine	200 ammon. nit.	40"	May 18	Oct. 4
Haywood County J. R. Edwards	Drilled 300 5-10-10 In Row 350 10-20-20	Atrazine	150 liq. nit.	40"	May 19	Sept. 21
Alamance County Paul McBane	350 10-20-20	Atrazine	175 liq. nit.	40"	May 9	Aug. 26
Rowan County Clyde McSwain	350 10-20-20	Atrazine	175 liq. nit.	40"	May 4	Aug. 19
Cleveland County C. W. Goforth	350 10-20-20	Atrazine	175 liq. nit.	40"	April 25	Test Discarded
Edgecombe County Ernest G. Davenport	150 Potash 600 3-9-18 100 10-20-20	Atrazine	175 liq. nit.	40"	April 14	Aug. 11
		Sorghum Silage				
Chatham County Horace Mann	350 10-20-20	Propazine	175 liq. nit.	40"	April 27	Sept. 6
Stanly County Spurgeon Brooks	350 10-20-20	Propazine	175 liq. nit.	40"	April 20	Aug. 24
Rowan County Clyde McSwain	350 10-20-20	Propazine	175 liq. nit.	40"	May 4	Sept. 7

1/ Top dressed with liquid nitrogen and 14 oz./A of 2,4-D in both corn and sorghum silage. When needed 1 1/4 lbs/A Lorox or 1 lb/A of Atrazine was used at layby to control grass in the corn test.

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 withing the row was approximately 8 inches for corn and 2 inches for sorghum. Row widths are shown in Table .

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 weigth was adjusted to 65% moisture.

Moisture Per Cent. 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 Per Cent. The formula TDN % - 79.40 (0.69 x CF) was used to calculate the TDN on a dry basis.

Estimated net Energy Per Cent. 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.

[3/] The chemical analyses were made under the direction of Dr. J. W. Gilliam and J. R. Piland of the Soils Department, N. C. State University.

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 were counted an 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 Tables 37 through 40. The data in Tables 29 through 32 are summaries over a three-year period for 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 1964, 1965, and 1966, 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 29. Performance of corn silage - Northern Mountains - Area I. Ashe County - Three year average 1964-1965-1966. 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
Pioneer 310	25.5	74.4	8.9	8.5	4.6	24.5	62.5	52.4	61	128
DeKalb 640	23.7	74.1	8.3	8.4	4.5	23.9	62.9	53.0	64	131
Coker 911	23.3	77.5	8.2	8.7	4.8	27.9	60.1	49.2	76	137
Mean of Test	23.2	74.3	8.1	8.3	4.3	24.8	62.3	52.2	65	131
N. C. 27	21.7	77.6	7.6	8.3	4.4	27.3	60.6	49.8	75	136
V.P.I. 648	21.7	73.1	7.6	7.7	3.8	24.6	62.4	52.4	63	133

Table 30. Performance of corn silage - Southen Mountains - Area II. Haywood County - Three year average 1964-1965-1966. 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 Count %
McNair 425	24.4	76.6	8.5	8.1	4.3	25.9	61.5	51.1	68	137	96
N. C. 270	23.8	76.8	8.4	8.5	4.6	25.3	62.0	51.7	69	142	98
DeKalb 1006	23.1	75.2	8.1	7.9	4.0	24.4	62.6	52.6	65	134	98
DeKalb 1051	22.9	77.0	8.0	9.0	5.0	25.3	61.9	51.6	69	132	97
Mean of Test	22.0	77.0	7.7	8.5	4.6	25.1	62.1	51.9	66	135	94
Pioneer 310	21.9	77.7	7.7	8.6	4.7	23.0	63.5	53.8	59	126	94
Coker 911	21.7	78.4	7.6	8.9	5.0	26.2	61.4	50.9	69	135	92
Wagwood 200	21.2	77.6	7.4	8.8	4.9	25.8	61.6	51.2	62	138	90
N. C. 27	20.3	78.9	7.1	8.7	4.8	26.3	61.3	50.7	69	139	89

1/ Corrected to a standard 65% moisture.

Table 31. Performance of corn silage - Piedmont - Area III. Three Year Average - 1964-1965-1966. 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 Count %	Lodging %
Pioneer 3048	17.3	73.0	6.1	9.0	5.0	23.5	63.2	53.4	50	112	91	3
N.C. 270	17.2	73.0	6.0	8.9	5.0	24.5	62.5	52.5	52	120	90	4
DeKalb 1051	16.4	72.3	5.8	9.2	5.2	22.5	63.9	54.4	56	114	92	6
Dixie 82	16.2	72.3	5.7	8.3	4.4	25.1	62.1	51.9	57	120	89	6
Wagwood 200	16.1	71.5	5.6	8.9	4.9	22.8	63.6	54.1	47	109	87	7
Mean of Test	16.0	71.8	5.6	8.8	4.9	23.9	62.9	53.1	51	111	90	6
N.C. 27	15.8	73.1	5.5	8.5	4.6	25.0	62.1	51.9	54	116	89	5
McNair 425	15.5	73.7	5.4	9.2	5.3	24.0	62.9	53.0	51	111	90	4
Watson 401A	15.0	68.5	5.2	9.1	5.2	21.2	64.8	55.7	41	100	89	11
Coker 911	15.0	73.6	5.2	9.5	5.5	24.5	62.5	52.5	51	108	90	3

Table 32. Performance of corn silage - Southern Coastal Plain - Area IV. Three Year Average - 1964-1965-1966. 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 Count %	Lodging %
N.C. 270	16.5	71.7	5.8	8.2	4.3	26.5	61.2	50.6	52	116	97	4
Dixie 82	15.8	71.2	5.6	8.2	4.4	25.4	61.9	51.6	52	113	94	2
Dixie 18	15.8	71.5	5.5	8.1	4.2	25.0	62.2	52.0	57	115	88	4
Coker 911	15.6	71.4	5.5	8.9	5.0	25.9	61.5	51.1	46	104	97	2
McNair 425	15.2	71.3	5.3	8.3	4.4	23.4	63.2	53.5	48	106	96	3
Mean of Test	15.0	71.4	5.3	8.3	4.4	25.4	61.9	51.6	51	111	94	3
S.C. 236	14.8	70.9	5.2	7.9	4.0	25.9	61.5	51.1	49	109	97	1
DeKalb 1051	14.7	71.3	5.1	8.5	4.6	22.2	64.1	54.7	51	109	98	2
Wagwood 200	14.1	70.3	4.9	8.6	4.7	23.7	63.1	53.3	43	103	82	1

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

Table 33. Performance of corn silage - Northern Mountains - Area I. Ashe County - Two Year Average 1965-1966. 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 Count %
Pioneer 310	24.6	73.4	8.6	8.8	4.8	24.0	62.8	53.0	60	124	98
DeKalb 640	23.2	72.8	8.1	8.6	4.6	24.0	62.8	52.9	64	128	98
Hollyview 160	22.7	74.0	8.0	8.8	4.8	25.7	61.7	51.4	64	128	98
Coker 911	22.7	77.6	8.0	9.1	5.2	27.7	60.2	49.4	76	136	95
Mean of Test	22.4	73.6	7.8	8.6	4.6	24.6	62.4	52.3	64	128	96
N. C. 27	20.5	77.4	7.2	8.5	4.6	27.0	60.8	50.0	72	132	89
V.P.I. 648	20.1	72.7	7.0	7.9	4.0	24.7	62.4	52.2	60	128	94

Table 34. Performance of corn silage - Southern Mountains - Area II. Haywood County - Two Year Average 1965-1966. 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 Count %
McNair 425	23.4	77.4	8.2	8.1	4.2	25.4	61.8	51.6	68	139	97
N. C. 270	22.6	77.6	8.0	8.3	4.4	25.0	62.1	52.0	70	144	99
DeKalb 1051	22.1	77.2	7.7	9.1	5.2	25.2	62.0	51.8	69	132	98
DeKalb 1006	21.6	75.9	7.6	7.7	3.8	25.0	62.2	52.0	66	134	99
Coker 911	20.9	79.0	7.3	8.9	5.0	26.2	61.4	50.9	70	137	94
McNair 440V	20.6	77.9	7.2	8.6	4.7	26.2	61.4	50.8	64	130	96
Pioneer 310	20.6	78.3	7.2	8.8	4.8	22.4	63.9	54.4	60	126	96
Mean of Test	20.6	77.7	7.2	8.5	4.6	25.0	62.2	52.0	66	136	94
Wagwood 200	19.8	78.0	6.9	8.6	4.8	26.0	61.4	51.0	62	140	88
N. C. 27	17.2	80.0	6.0	8.8	4.8	25.9	61.6	51.0	71	142	88

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

Table 35. Performance of corn silage - Piedmont - Area III. Two Year Average - 1965-1966. 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 Count %	Lodging %
Pioneer 3009	16.8	72.0	5.9	8.0	4.2	24.6	62.6	52.5	52	112	92	4
McNair 440V	16.0	73.9	5.6	9.2	5.2	24.0	62.8	53.0	49	108	90	2
Coker 52	15.4	72.2	5.4	9.1	5.2	23.2	63.4	53.8	47	102	92	4
N.C. 270	15.2	74.1	5.3	9.0	5.1	24.4	62.6	52.6	52	120	88	4
DeKalb 1051	15.0	73.2	5.3	9.4	5.4	22.2	64.0	54.6	57	116	89	6
Pioneer 3048	15.0	74.2	5.2	9.1	5.1	23.5	63.2	53.4	50	112	88	2
Dixie 82	14.5	74.0	5.1	8.4	4.4	25.7	61.6	51.3	57	118	86	4
Wagwood 200	14.4	72.8	5.0	9.0	5.0	22.8	63.6	54.1	46	112	82	8
Mean of Test	14.4	73.2	5.0	9.0	5.0	24.0	62.8	53.0	51	112	88	6
N.C. 27	13.9	74.4	4.8	8.6	4.8	24.8	62.2	52.1	54	116	86	4
Watson 401A	13.8	69.8	4.8	9.4	5.4	21.2	64.8	55.6	41	104	86	12
Coker 911	13.6	74.8	4.8	9.7	5.7	24.6	62.5	52.4	51	109	87	4
McNair 425	13.6	74.8	4.8	9.4	5.4	24.5	62.5	52.5	52	111	88	4
Watson 430	13.0	73.1	4.6	9.2	5.2	22.3	64.0	54.6	44	102	87	7

Table 36. Performance of corn silage - Piedmont - Area III. Two Year Average - 1965-1966. 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 Count %	Lodging %
Dixie 18	15.8	72.3	5.6	8.2	4.3	25.4	61.8	51.6	58	116	92	4
McNair 440V	14.8	71.1	5.2	8.4	4.6	26.0	61.4	51.0	46	102	96	2
Coker 911	14.6	72.6	5.2	9.0	5.1	26.9	60.8	50.2	47	105	97	2
N.C. 270	14.6	73.6	5.2	8.3	4.4	27.6	60.4	49.5	52	114	98	2
McNair 425	13.9	72.1	4.8	8.4	4.6	24.2	62.6	52.8	50	107	95	2
Mean of Test	13.9	72.5	4.9	8.4	4.5	26.0	61.6	51.1	52	110	94	2
Pioneer 3009	13.8	72.4	4.8	7.8	3.9	25.2	62.0	51.8	48	109	96	2
Dixie 82	13.8	73.0	4.8	8.4	4.6	26.4	61.2	50.6	54	114	92	2
DeKalb 1051	13.5	71.8	4.7	8.7	4.8	21.8	64.4	55.1	52	108	98	2
S.C. 236	13.2	71.8	4.6	7.9	4.0	26.8	60.8	50.2	50	106	97	1
Wagwood 200	11.8	71.8	4.1	8.8	4.9	24.3	62.6	52.7	44	101	74	0

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

Table 37. Performance of corn silage - Northern Mountains - Area I. Ashe County - 1966.

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 %
*NC 3207	23.9	72.0	8.4	7.7	3.8	22.6	63.8	54.3	62	132	98
Pioneer 310	23.7	71.0	8.3	7.8	3.8	21.2	64.8	55.6	59	123	99
DeKalb XL-385	22.2	69.0	7.8	7.2	3.4	21.2	64.8	55.6	61	124	97
Hollyview 260	21.8	72.3	7.6	8.6	4.7	20.3	65.4	56.5	61	125	100
DeKalb XL-65A	21.2	69.7	7.4	8.3	4.4	18.3	66.8	58.4	57	120	99
McNair X202	20.8	69.6	7.3	6.6	2.8	21.6	64.5	55.2	58	121	99
DeKalb 805A	20.3	70.6	7.1	7.2	3.4	19.5	66.0	57.2	58	122	97
Coker 911	20.1	75.7	7.0	8.6	4.7	23.7	63.0	53.2	68	131	97
Mean of Test	19.6	72.0	6.8	8.0	4.1	21.4	64.6	55.4	60	125	97
DeKalb 640	19.2	72.5	6.7	8.2	4.3	19.4	66.0	57.3	59	124	100
T-E E20YA	18.8	70.3	6.6	8.0	4.2	18.6	66.6	58.1	59	118	98
T-E SX20Y	18.3	68.6	6.4	7.4	3.6	19.6	65.8	57.1	59	123	99
Hollyview 160	18.1	72.6	6.3	8.2	4.3	23.6	63.2	53.4	59	125	98
V.P.I. 648	16.6	71.6	5.8	7.6	3.6	21.5	64.6	55.4	59	126	92
Wagwood 200	16.5	75.1	5.8	8.5	4.6	23.7	63.0	53.2	60	125	93
Coker 52	16.3	75.2	5.7	9.7	5.7	24.2	62.7	52.7	58	127	91
N. C. 27	15.4	75.4	5.4	7.6	3.8	23.8	63.0	53.1	64	128	89
L.S.D. (.05)	2.6	2.1	.9	1.2	1.1	2.8	1.9	2.7	4	7	5
(.01)	3.5	2.8	1.2	1.7	1.6	3.8	2.6	3.7	5	9	7
C.V. (%)	9.2	2.0	9.2	7.1	13.0	6.0	1.3	2.2	4	4	4

*Experimental

1/Corrected to a standard 65% moisture.

Table 38. Performance of corn silage - Southern Mountains - Area II. Haywood County - 1966

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 %
McNair 425	26.6	75.4	9.3	7.6	3.8	23.0	63.6	53.8	64	136	100
DeKalb 1101	25.8	76.8	9.0	8.2	4.4	24.2	62.8	52.8	70	138	98
N. C. 270	24.3	75.9	8.5	7.9	4.0	22.3	64.0	54.6	64	139	100
DeKalb 1006	23.3	74.5	8.2	7.7	3.8	22.4	63.9	54.4	64	132	100
DeKalb 1051	22.7	75.8	7.9	9.0	5.0	22.8	63.6	54.0	66	130	99
McNair 440V	22.0	76.2	7.7	8.7	4.8	23.3	63.4	53.6	62	129	100
Coker 52	21.8	76.4	7.6	8.8	4.9	22.4	64.0	54.4	57	127	89
McCurdy M97	21.5	73.7	7.5	7.8	4.0	20.0	65.6	56.8	62	127	99
Coker 911	21.5	77.9	7.5	8.9	5.0	22.8	63.8	54.2	64	132	92
Mean of Test	21.4	76.1	7.5	8.3	4.4	21.9	64.3	54.9	62	131	95
Pioneer 310	21.3	76.8	7.5	8.6	4.7	19.8	65.7	56.8	57	121	96
Pioneer 3048	20.1	78.1	7.0	8.0	4.2	21.5	64.6	55.3	63	135	97
T-E Silagemaster	19.9	73.9	7.0	8.1	4.2	20.2	65.4	56.6	61	128	96
T-E E20YA	19.2	74.0	6.7	7.8	4.0	19.3	66.1	57.4	58	121	98
McNair 340V	18.2	75.6	6.4	8.6	4.6	20.8	65.0	56.0	60	128	92
Wagwood 200	17.7	78.0	6.2	8.4	4.6	22.6	63.8	54.2	60	135	82
N. C. 27	16.6	78.5	5.8	8.4	4.4	23.0	63.6	53.8	67	141	84
L.S.D. (.05)	3.6	3.1	1.3	1.0	.9	4.2	2.9	4.0	6	9	12
(.01)	4.8	4.2	1.7	1.3	1.3	5.8	4.1	5.6	8	12	16
C.V. (%)	11.8	2.8	11.8	5.4	9.8	8.9	2.1	3.3	7	5	9

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

Table 39. Performance of corn silage - Piedmont - Area III. Alamance and Rowan Counties - 1966.

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 %
Pioneer 3009	17.4	72.7	6.1	8.2	4.3	23.8	63.0	53.1	55	113	93
McNair 440V	16.4	74.2	5.7	9.8	5.8	21.9	64.3	55.0	52	104	93
Pioneer 3048	15.4	74.5	5.4	9.4	5.4	21.8	64.3	55.0	53	108	88
Coker 52	15.3	72.0	5.4	9.4	5.4	21.7	64.4	55.1	48	96	93
DeKalb 1051	15.1	73.2	5.3	9.4	5.4	23.0	63.5	53.9	59	112	86
N.C. 270	14.5	74.8	5.1	9.6	5.6	23.4	63.2	53.5	54	115	89
DeKalb 1213	13.9	74.3	4.9	8.8	4.8	24.6	62.4	52.3	57	104	95
Mean of Test	13.8	73.6	4.8	9.5	5.5	22.8	63.7	54.1	52	104	87
McNair 340V	13.7	73.5	4.8	9.6	5.6	22.7	63.7	54.2	49	92	89
Watson 401A	13.6	71.2	4.8	9.9	5.9	19.9	65.7	56.9	46	102	88
McNair 425	13.1	75.3	4.6	10.1	6.1	23.4	63.3	53.6	54	104	87
Wagwood 200	13.0	73.1	4.6	9.6	5.6	22.0	64.2	54.9	49	105	75
Watson 430	12.9	74.5	4.5	9.6	5.6	21.2	64.8	55.6	49	100	88
Coker 911	12.8	75.1	4.5	10.6	6.6	22.7	63.8	54.2	53	102	92
N.C. 27	12.7	75.6	4.4	9.3	5.4	24.5	62.5	52.4	58	110	89
T-E Silagemaster	12.4	70.3	4.4	9.7	5.7	23.0	63.5	53.9	49	100	83
Dixie 82	12.3	75.6	4.3	9.0	5.0	24.9	62.2	52.1	59	112	82
Dixie 29	12.2	72.4	4.3	9.0	5.0	22.5	63.9	54.4	51	105	74
*NC 3392	11.7	73.4	4.1	9.6	5.6	22.9	63.6	53.9	48	94	82
L.S.D. (.05)	2.9	2.3	1.0	1.1	1.0	2.5	1.7	2.4	4	9	11
(.01)	4.0	3.1	1.4	1.4	1.4	3.4	2.3	3.2	6	13	15
C.V. (%)	15.3	2.9	15.3	5.1	8.3	7.5	1.8	3.0	9	7	9

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

Table 40. Performance of corn silage - Southern Coastal Plain - Area IV. Edgecombe County - 1966.

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 %
N. C. 270	11.6	74.8	4.1	9.4	5.4	24.6	62.5	52.4	52	110	98
DeKalb 1101	11.6	74.4	4.0	9.6	5.6	23.9	63.0	53.0	52	104	98
Florida 200A	11.4	77.1	4.0	9.2	5.3	26.2	61.3	50.8	56	106	96
DeKalb 1213	11.0	74.3	3.9	9.2	5.2	26.6	61.0	50.4	53	110	96
DeKalb 1051	10.9	70.4	3.8	9.6	5.6	19.4	66.0	57.4	52	106	98
McNair 340V	10.9	73.4	3.8	9.4	5.4	21.8	64.4	55.0	38	92	95
Pioneer 3048	10.8	73.2	3.8	9.8	5.8	24.4	62.6	52.6	52	104	94
Coker 52	10.8	72.0	3.8	11.0	6.9	22.4	64.0	54.5	40	94	96
Pioneer 3009	10.6	73.9	3.7	8.8	4.9	23.8	63.0	53.2	48	106	92
Watson 401A	10.4	67.5	3.6	10.6	6.6	22.0	64.2	54.9	43	105	91
McNair 425	10.3	75.0	3.6	9.8	5.8	21.7	64.4	55.2	50	100	94
Dixie 18	10.2	76.2	3.6	9.8	5.8	23.8	63.0	53.1	57	106	93
McNair 440V	10.2	74.2	3.6	10.2	6.2	25.6	61.7	51.4	46	96	96
Watson 430	10.2	72.0	3.6	9.4	5.4	22.2	64.1	54.7	40	98	97
Mean of Test	10.2	74.0	3.6	9.8	5.8	24.0	62.9	53.0	48	102	93
Dixie 82	10.0	75.1	3.5	9.7	5.7	26.5	61.1	50.5	55	109	90
McCurdy M306	9.8	76.2	3.4	9.5	5.6	26.8	60.9	50.2	50	104	96
T-E Silagemaster	9.4	70.3	3.3	9.7	5.7	22.0	64.3	54.9	43	106	93
Coker 911	9.1	77.7	3.2	10.4	6.4	25.6	61.8	51.4	46	98	96
S. C. 236	9.0	75.8	3.2	9.8	5.8	26.0	61.4	51.0	50	98	96
Wagwood 200	5.2	75.9	1.8	10.5	6.5	23.8	63.0	53.2	40	90	49
L.S.D. (.05)	1.9	3.9	.7	1.2	1.1	3.2	2.3	3.1	5	9	10
(.01)	2.5	5.2	.9	1.6	1.5	4.5	3.1	4.3	7	12	14
C.V (%)	12.9	3.6	12.9	5.5	8.7	6.4	1.6	2.7	7	6	8

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

Table 41. Performance of sorghum silage - Piedmont - Area III. Three-year average. 1964-1965-1966 Average of 9 locations.

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Plant Height Inches	Days to Mid-Bloom
T-E Grazemaster	18.6	65.0	6.5	8.2	4.3	28.7	59.6	48.4	111	82
T-E Haygrazer	18.0	66.0	6.3	8.5	4.6	27.7	60.3	49.4	104	77
Frontier S-214	17.3	70.6	6.0	8.2	4.3	26.0	61.5	51.1	106	81
Sart	17.2	71.5	6.0	7.5	3.7	25.3	62.0	51.7	113	86
T-E Milkmaker	16.9	66.7	5.9	8.6	4.7	24.3	62.7	52.7	98	71
Mean of Test	16.2	67.1	5.7	8.4	4.5	25.2	62.0	51.7	99	75
T-E Yieldmaker	16.0	68.5	5.6	8.5	4.6	24.3	62.6	52.7	102	74
Aztec	15.9	67.7	5.6	8.3	4.4	22.5	63.9	54.3	99	75
T-E Silomaker	15.7	65.2	5.5	8.9	4.9	23.1	63.4	53.8	88	68
NK 320	15.5	66.0	5.4	8.2	4.3	23.0	63.6	53.9	94	70
NK 300	15.4	62.5	5.4	9.4	5.4	21.9	64.3	54.9	81	63
Texas Seeded Ribbon	15.0	76.2	5.2	7.4	3.5	26.4	61.2	50.6	110	93

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

Table 42. Performance of sorghum silage - Piedmont - Area III. Two-year average. 1965-1966. Average of 6 locations

Entries	Green Wt. Tons/A[1/]	Moisture %	Dry Matter Tons/A	Crude Protein %	Digestible Protein %	Crude Fiber %	TDN %	ENE %	Plant Height Inches	Days to Mid-Bloom
Pioneer 931	18.3	65.2	6.4	7.8	4.0	31.6	57.6	45.6	114	90
Beefbuilder T	16.5	71.2	5.8	7.7	3.8	23.6	63.2	53.4	109	81
Advance 1085 F	16.4	70.2	5.8	7.6	3.7	25.0	62.1	52.0	108	82
T-E Grazemaster	15.1	66.0	5.2	8.2	4.4	27.4	60.4	49.6	108	84
T-E Haygrazer	14.6	66.6	5.1	8.5	4.6	27.0	60.7	50.0	101	79
Aztec	14.2	68.6	5.0	8.2	4.2	22.0	64.2	54.8	99	73
T-E Milkmaker	14.2	67.1	5.0	8.4	4.5	23.7	63.1	53.2	96	68
Frontier S-214	14.2	72.0	5.0	8.2	4.3	25.4	61.9	51.6	104	77
NK 320	13.8	66.8	4.8	8.0	4.2	22.0	64.2	54.8	95	68
Sart	13.8	71.8	4.8	7.5	3.7	24.0	62.8	52.9	111	84
NK 300	13.4	62.6	4.7	9.5	5.5	21.5	64.6	55.4	84	58
Mean of Test	13.4	67.6	4.7	8.4	4.6	24.6	62.4	52.4	98	74
T-E Yieldmaker	13.2	69.4	4.6	8.4	4.4	24.2	62.6	52.7	102	72
T-E Silomaker	13.0	66.6	4.6	8.8	4.9	22.5	63.8	54.4	89	64
Southern Cross	12.7	62.6	4.4	8.1	4.2	27.4	60.4	49.6	103	76
NK 315	12.2	67.0	4.2	8.8	4.8	22.8	63.6	54.0	82	64
*Frontier 206 FX	12.2	66.3	4.2	9.0	5.1	25.6	61.8	51.4	98	68
*Frontier 202 FX	11.6	67.3	4.0	9.7	5.7	23.0	63.6	53.9	83	58
Advance 1071 F	11.2	66.9	3.9	8.4	4.6	21.0	64.9	55.8	98	70
DeKalb FS-1a	10.6	63.6	3.8	9.2	5.3	22.5	63.8	54.4	81	57
Texas Seeded Ribbon	10.4	76.8	3.6	7.4	3.5	25.5	61.8	51.5	108	93

*Experimental

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

Table 43. Performance of sorghum silage - Piedmont - Area III. Rowan, Chatham and Stanly Counties - 1966.

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 %
Pioneer 931	16.1	64.5	5.6	8.5	4.6	27.4	60.5	49.6	98	93	88
Advance 1085F	15.6	68.2	5.5	7.8	4.0	23.4	63.3	53.6	108	81	87
Beefbuilder T	14.9	69.6	5.2	8.2	4.3	22.1	64.2	54.8	105	83	88
DeKalb-Sudax SX-12	14.2	65.7	5.0	8.2	4.3	26.6	61.1	50.5	100	94	92
T-E Grazemaster	13.8	64.2	4.8	8.6	4.6	23.9	62.9	53.0	94	92	85
DeKalb FS-26	13.6	71.6	4.8	8.5	4.6	23.0	63.6	54.0	111	77	86
Aztec	13.1	65.8	4.6	8.8	4.8	18.9	66.4	57.8	90	72	87
Southern Cross	12.9	65.0	4.5	8.1	4.2	23.7	63.0	53.2	90	85	88
*McNair 66102-S	12.7	66.4	4.5	8.2	4.3	18.9	66.4	57.8	94	73	87
NK-320	12.6	63.4	4.4	8.1	4.3	19.6	65.9	57.2	90	63	95
Leafmaster 43	12.1	68.6	4.2	9.2	5.2	24.1	62.8	52.8	105	56	90
Frontier S-214	12.1	69.5	4.2	8.5	4.6	23.2	63.4	53.7	106	70	88
T-E Milkmaker	11.9	63.7	4.2	9.1	5.1	20.2	65.5	56.6	91	61	89
Mean of Test	11.8	65.7	4.1	8.9	5.0	21.6	64.5	55.2	95	70	86
T-E Haygrazer	11.7	65.4	4.1	8.8	4.8	24.6	62.4	52.4	88	85	90
NK 300	11.3	58.0	4.0	10.3	6.3	17.4	67.4	59.3	86	46	90
NK 330	11.1	65.0	3.9	9.6	5.6	21.5	64.6	55.3	99	53	88
NK 315	10.9	66.3	3.8	9.4	5.5	21.4	64.6	55.4	73	60	95
T-E Silomaker	10.9	62.9	3.8	9.6	5.6	19.4	66.0	57.4	88	55	82
Advance 1041 GS	10.8	65.5	3.8	9.6	5.6	22.9	63.6	54.0	83	84	88
Texas Seeded Ribbon	10.8	73.7	3.8	7.5	3.6	22.6	63.8	54.3	112	90	82
Titan R	10.4	63.0	3.6	9.0	5.0	19.2	66.2	57.6	87	59	84
Sart	10.3	71.5	3.6	8.4	4.5	21.9	64.3	55.0	111	83	74
T-E Yieldmaker	10.3	67.4	3.6	9.2	5.2	21.2	64.8	55.7	92	69	80
*Frontier 206 FX	9.9	64.8	3.5	9.8	5.8	21.4	64.7	55.4	106	53	80
Advance 1071F	9.6	63.3	3.3	9.0	5.1	18.7	66.5	58.0	92	67	78
*Frontier 202 FX	9.3	63.3	3.3	10.6	6.5	19.0	66.3	57.7	94	40	83
*Paymaster X-5870	8.5	63.2	3.0	9.3	5.4	18.0	67.0	58.8	84	56	86
DeKalb FS-1a	7.6	61.4	2.7	9.5	5.6	20.3	65.4	56.5	87	44	82
L.S.D. (.05)	2.0	4.0	.7	1.1	1.0	3.3	2.3	3.1	8	7	9
(.01)	2.6	5.3	.9	1.4	1.3	4.4	3.0	4.2	11	9	13
C.V. (%)	16.5	4.5	16.5	9.6	16.0	8.7	2.0	3.2	2	9	10

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

Part IV

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 1954, the acreage has more than doubled to over an estimated 899 thousand acres planted in 1966. 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. 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 Comapny, Hartsville, South Carolina

N. C. Agricultural Experiment Station and U.S.D.A., Raleigh, N. C.

Test Locations

Five tests were conducted in 1966 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.

Seasonal Conditions

The growing season was generally favorable for the production of soybeans in the Coastal Plain and Piedmont Areas of North Carolina for 1966. All tests had good moisture at planting and good stands were obtained at all locations. The season was fair in the Piemont with average yields. The Cumberland County Test, planted on deep sand, suffered from hot, dry weather and Southern Stem Rot. All locations were included as individual county data and in a combined table for yield. Other characters are listed in a combined table for all locations.

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 44 Planting, Harvesting and yield measurements were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

Table 44. Cultural practices for soybean performance trials.

Area and Co-operator	Fertilizer lbs/A	Row Spacing Inches	Date of Planting	Date of Harvest
Coastal Plain				
Cumberland County	500			October 18
Rowland Williams	0-25-25	40"	May 11	November 3
Pasquotank County	500			October 21
Charles Moore	0-25-25	40"	May 12	November 4
Washington County	500			October 21
J. W. Smith	0-25-25	40"	May 12	November 4
Piedmont				
Randolph County	500			
Marshall Joyce	0-25-25	40"	May 16	November 8
Anson County	600			
T. A. McRae	5-10-10	40	June 6	November 7

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 a Tag Heppenstall 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 45 and 46. Varietal performance varied between locations, depending upon the seasonal conditions. Tables 47 and 48 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 47 and 48. The approximate date of maturity for these groups has been presented earlier. Information on lodging, plant height and moisture are shown in Tables 49 and 50.

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 45. Performance of Soybeans. Two Year Average 1965-1966
Average of 9 locations

Entries	Yield Bu/Ac	Lodging	Plant Height Inches	Moisture
		EARLY MATURING ENTRIES		
Hood	40.6	1.6	34	13.32
Dare	37.7	1.4	33	13.20
Mean of Test	36.6	1.6	32	13.26
N59-6913	36.2	1.2	31	13.04
Hill	32.2	2.1	32	13.43
		LATE MATURING ENTRIES		
Coker 3208	41.7	1.1	34	13.96
Coker Hampton 266	41.4	1.8	38	15.28
N63-1712	40.1	1.4	40	12.77
N63-1130	40.0	1.4	38	12.74
N63-1131	39.4	1.4	37	12.94
N63-1926	39.4	1.6	39	13.12
N63-858	38.4	1.5	38	12.88
N63-700	38.4	1.4	40	12.74
Mean of Test	38.0	1.5	38	31.35
Lee	37.6	1.4	32	12.66
Jackson	37.6	1.5	42	13.06
Bragg	37.0	1.9	43	12.70
N63-1852	36.8	1.9	42	12.80
N62-136	35.2	1.4	34	12.80

Table 46. Performance of Soybeans. Three Year Average - 1964-1965-1966
Average of 14 locations

Entries	Yield Bu/Ac	Lodging	Plant Height Inches	Moisture
		EARLY MATURING ENTRIES		
Hood	40.5	2.1	33	14.37
Mean of Test	37.0	2.1	34	13.74
Hill	34.6	2.7	32	14.50
		LATE MATURING ENTRIES		
Coker Hampton 266	41.0	2.2	39	14.76
Lee	38.8	2.0	34	13.25
Jackson	37.9	1.7	44	13.28
Mean of Test	37.9	2.0	38	13.66
N62-136	37.6	1.9	34	13.35
Bragg	36.9	2.3	44	12.97

EARLY MATURING ENTRIES

Table 47. Performance of Soybeans by Locations and Combined (Bu/A) 1966

Entries	Anson	Randolph Pasquotank		Washington Cumberland		Average	Maturity Group
			Commercial Varieties				
Dare	33.5	35.0	27.0	40.8	33.5	34.0	V
Hill	31.6	28.2	30.8	34.3	20.5	29.1	V
Hood	34.8	41.0	31.6	43.1	41.0	38.3	VI
			Experimentals				
N59-6913	28.8	43.1	29.2	38.4	27.6	33.4	V
V61-20	23.5	35.8	33.8	40.5	26.7	32.1	VI
Mean of Test	30.5	36.6	30.5	39.4	29.8	33.4	
L.S.D. (.05)	6.6	5.9	8.0	3.8	8.7	5.8	
(.01)	9.3	8.3	11.2	5.3	12.2	8.0	
C.V. (%)	14.1	10.4	17.0	6.2	18.9	13.2	

LATE MATURING ENTRIES

Table 48. Performance of Soybeans by Locations and Combined (Bu/A) 1966

Entries	Anson	Randolph Pasquotank		Washington Cumberland		Average	Maturity Group
			Commercial Varieties				
Lee	38.3	35.0	33.0	40.7	29.5	35.3	VI
Pickett	34.6	28.9	36.4	36.7	24.9	32.3	VI
Jackson	39.7	37.2	31.2	31.9	33.2	34.6	VII
Bragg	39.7	36.7	32.7	38.3	33.5	36.2	VII
Coker Hampton 266	43.0	42.9	46.7	42.2	29.1	40.8	VIII
Coker 240	34.2	34.9	42.2	34.4	27.8	34.7	VIII
			Experimentals				
N62-136	33.4	33.9	31.6	36.2	30.7	33.2	VI
N63-700	37.0	32.9	37.5	38.3	33.4	35.8	VII
N63-858	33.1	37.7	34.4	37.7	31.3	34.8	VII
N63-1852	34.0	32.6	30.4	35.3	33.0	33.1	VII
N63-1926	35.4	37.5	27.0	34.0	34.7	33.7	VII
N63-1712	40.0	36.4	31.0	41.0	31.4	36.0	VII
N63-1206	36.8	34.6	34.5	38.1	36.6	36.1	VII
F59-1505	36.6	38.2	35.2	37.2	29.2	35.3	VII
N63-1130	39.5	38.8	30.1	35.2	31.6	35.0	VII
N63-1131	36.2	38.6	36.6	38.5	26.0	35.2	VII
N63-1625	38.3	39.1	34.8	40.2	38.8	38.2	VII
N63-1552	39.1	37.6	30.5	36.6	39.5	36.6	VII
N63-1197	38.4	38.3	39.5	39.1	35.1	38.1	VII
Coker 3208	43.3	39.6	41.5	45.6	38.4	41.7	VIII
Mean of Test	37.5	36.6	34.8	37.9	32.4	35.8	
L.S.D. (.05)	5.2	6.0	5.8	5.3	8.8	3.9	
(.01)	6.9	8.0	7.7	7.1	11.7	5.2	
C.V. (%)	9.6	11.4	11.5	9.7	18.9	12.3	

EARLY MATURING ENTRIES

Table 49. Lodging, Plant Height and Moisture of Soybean Varieties Combined for Anson, Randolph, Pasquotank, Washington and Cumberland Counties. 1966

Entries	Lodging	Plant Height (inches)	Moisture %
		Commercial Varieties	
Dare	1.0	30	15.75
Hill	1.0	29	15.99
Hood	1.0	30	15.57
		Experimentals	
N59-6913	1.0	28	15.36
V61-20	1.0	28	15.82
Mean of Test	1.0	29	15.70
L.S.D. (.05)		4	.71
(.01)		5	.93
C.V. (%)		7	3.8

LATE MATURING ENTRIES

Table 50. Lodging, Plant Height and Moisture of Soybean Varieties Combined for Anson, Randolph, Pasquotank, Washington and Cumberland Counties. 1966

Entries	Lodging	Plant Height (inches)	Moisture %
		Commercial Varieties	
Lee	1.4	32	15.06
Pickett	1.0	31	15.25
Jackson	1.0	43	15.74
Bragg	1.0	42	15.17
Coker Hampton 266	1.0	35	18.66
Coker 240	1.0	39	17.70
		Experimentals	
N62-136	1.0	31	15.48
N63-700	1.0	37	15.34
N63-858	1.0	35	15.60
N63-1852	1.0	40	15.44
N63-1926	1.0	38	15.68
N63-1712	1.0	39	15.54
N63-1206	1.0	35	15.27
F59-1505	1.0	41	15.86
N63-1130	1.0	36	15.32
N63-1131	1.0	35	15.61
N63-1625	1.0	36	15.97
N63-1552	1.0	40	16.58
N63-1197	1.0	37	15.77
Coker 3208	1.0	32	16.99
Mean of Test	1.0	37	15.90
L.S.D. (.05)		3	1.04
(.01)		4	1.38
C.V. (%)		4	4.9

Part V

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 1966 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

DeKalb Agricultural Association, Inc., Bogart, Georgia

McNair Seed Company, Laurinburg, North Carolina

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

Stoneville Pedigreed Seed Company, Stoneville, Mississippi

University of Arkansas, Fayetteville, Arkansas

SEASONAL CONDITIONS

Three out of the four locations were damaged to the extent that data were not reliable. The Anson County test was planted on April 19, destroyed by hail and wind, planted again on May 13, destroyed by sand blowing from high winds. The season was too late to replant this test in this area.

Early in the season the Robeson County test was damaged from excess water with the cotton in over one-half of the test being killed from flooding. Later extreme dry weather damaged the remaining cotton plants in the other half of this test that survived the early water damage. The Edgecombe County test had a fair stand with good growth. The large plants were late maturing and this test was damaged from an early freeze. The immature bolls were frozen and never opened. The Cleveland County test was conducted under fair weather conditions. The plants were medium height and well fruited. Yields ranged to a high of 916 pounds of lint per acre with a mean average of 604 pounds of lint per acre.

Test Locations

Four locations were planted in 1966 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 51. Planting, harvesting and yield measurements were directly supervised by personnel of the North Carolina Agricultural Experiment Station. The Cleveland County test was hand picked.

Criteria for Evaluating Cotton Varieties

A randomized block design with six 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 51.

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

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 at each location. 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: Ration 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.

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

Table 51. Cultural practices for cotton performance trials.

Area and co-operator	Fertilizer lbs/A	Herbicide pre-emerge	Row Spacing in.	Date of Planting	Date of Harvest
Edgecombe County Melvin Smily	800 5-10-10	Treflan	40"	April 26	Test Discarded
Robeson County Klynn Lowery	350 10-20-20	Treflan	40"	April 21	Test Discarded
Anson County Thomas Rhyne	300 5-10-10	Treflan	40"	May 13	Test Discarded
Cleveland County Glenn Sperling	300 10-20-20	Treflan	40"	April 25	Nov. 15

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

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

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

RESULTS

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

The data presented in Tables 52 and 53 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 52.

Individual location data are presented in Table 54. 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.

Table 52. Performance of cotton varieties - Three Year Average - 1964-1965-1966. Average of 7 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"
Rex Smoothleaf	876	2437	35.9	1 3/32	76	.38	.49	1.06	46	4.4	78.1
Dixie King II	825	2223	36.8	1 3/32	69	.38	.49	1.05	47	4.6	80.5
McNair 1032	805	2204	36.3	1 3/32	90	.39	.49	1.04	47	4.6	82.0
Mean of Test	771	2103	36.5	1 3/32	82	.39	.50	1.07	47	4.5	80.4
TH-149	769	2159	35.3	1 3/32	73	.40	.51	1.09	47	4.4	83.2

Table 53. Performance of cotton varieties - Two Year Average - 1965-1966. 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"
Rex Smoothleaf	816	2268	36.0	1 3/32	81	.38	.48	1.07	45	4.5	79.6
Dixie King II	729	1999	36.3	1 1/16	74	.38	.49	1.06	46	4.6	81.6
Coker 2202	720	1870	38.4	1 1/16	90	.36	.47	1.04	46	5.1	81.3
Pennington Hy-Bee	662	1823	36.2	1 3/32	83	.38	.50	1.08	46	4.6	81.3
McNair 1032	660	1852	35.6	1 3/32	95	.38	.48	1.04	46	4.7	83.4
TH-149	656	1878	34.8	1 1/8	76	.40	.52	1.11	46	4.6	87.2
Mean of Test	652	1790	36.3	1 3/32	88	.38	.50	1.07	46	4.6	81.8

Table 54. Performance of cotton varieties. Average of Cleveland County - 1966

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"
Rex Smoothleaf	916	2490	36.9	1 1/16	92	.34	.45	1.04	43	4.7	80.1
Hy-Bee 101	733	1895	38.7	1 1/32	98	.32	.43	.99	43	4.6	85.6
Dixie King II	724	1983	36.6	1 1/32	80	.35	.46	1.02	45	4.8	80.7
Coker 2202	655	1677	39.1	1 1/32	98	.32	.43	1.00	43	5.2	80.7
McNair 1032	618	1689	36.6	1 1/16	103	.36	.46	1.03	45	4.9	83.6
McNair 3	615	1676	36.7	1 1/16	97	.35	.46	1.02	45	5.0	76.0
Mean of Test	604	1644	36.7	1 1/16	98	.35	.46	1.04	44	4.8	82.1
McNair 1	601	1650	36.5	1 1/16	104	.34	.46	1.04	44	4.8	75.6
DeKalb 150	596	1641	36.3	1 1/16	96	.36	.48	1.09	44	4.6	89.5
McNair 4	574	1584	36.3	1 1/16	96	.33	.44	1.00	44	5.0	84.2
Pennington Hy-Bee	570	1546	36.8	1 1/16	90	.35	.47	1.05	44	4.8	80.6
McNair 6	563	1528	36.9	1 1/16	91	.36	.47	1.05	45	4.8	74.5
TH-149	558	1578	35.4	1 1/16	86	.36	.47	1.07	44	4.8	86.6
Coker 201	557	1482	37.6	1 1/16	100	.34	.45	1.05	43	5.0	82.1
Hy-Bee 200	555	1608	34.7	1 1/16	97	.34	.45	1.03	43	4.8	77.2
Atlas (A x C) 261	539	1490	36.1	1 1/16	102	.36	.47	1.05	45	5.0	92.2
Coker 3210	530	1382	38.3	1 1/16	106	.35	.46	1.04	45	5.1	82.7
Coker 413-67	493	1365	36.1	1 1/16	114	.35	.46	1.06	44	4.6	83.4
Coker 413	471	1326	35.4	1 1/16	105	.34	.46	1.05	44	4.4	83.0
L.S.D. (.05)	97	253	2.0	.6/32	13	.02	.02	.03	1	.3	2.0
(.01)	129	337	2.6	.8/32	17	.02	.03	.04	2	.5	2.7
C.V. (%)	14	13	5	2	11	4	4	2	3	6	2