Research Report No. 33
December, 1969

# *Measured crop performance*

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

# 1969

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

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

Corn, grain sorghum, silage, soybeans and cotton are produced in the same general areas of North Carolina. To make the data on each of these crop 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 1969[2/], as well as summary table for the past two and three years.

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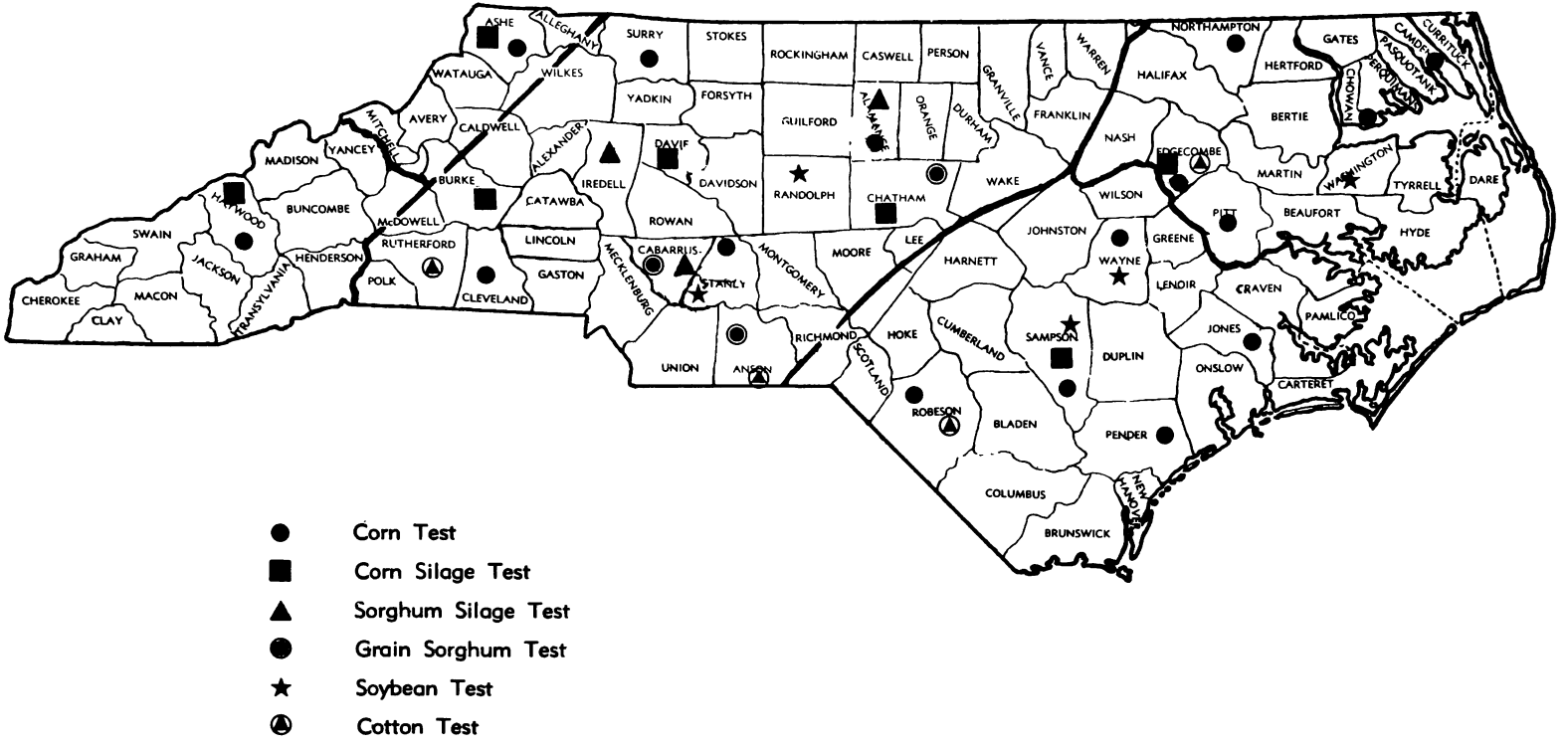
[1/]The Official Variety Testing Program recognizes the co-operative spirit and civic-minded service rendered by the farmers who have furnished, prepared and cultivated the land for these trials.

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 and Sandra Biggs. This assistance is gratefully acknowledged.

1969

## FIGURE 1.—LOCATION OF OFFICIAL VARIETY TESTS



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

# CO-OPERATORS 1969

## Corn

Area I - Northern Mountains

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

Area II - Southern Mountains

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

Area III - Piedmont

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

Surry County, Kester Sink, Route 7, Mount Airy, N. C. Extension Chairman, C. E. Jackson and assistants, co-operating.

Stanly County, D. G. Harwood, Route 1, New London, N. C. Extension Chairman, V. A. Huneycutt and assistants co-operating.

Cleveland County, A. W. Green, Route 3, Shelby, N. C. Extension Chairman, H. W. Dameron and assistants co-operating.

Area IV - Southern Coastal Plain

Jones County, Clem T. Grady, Route 2, Dover, N. C., Extension Chairman, J. R. Franck and assistants co-operating.

Pender County, Mrs. Tim Rivenbark, Rocky Point, N. C., Extension Chairman, J. N. Honeycutt and assistants co-operating.

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

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

Area V - Northern Coastal Plain

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

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

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

Area VI - Northern Coastal Plain - Short Season

Camden County, Johnny Williams, Bell Cross, N. C., Extension Chairman E. W. Rogister and assistants co-operating.

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

Wayne County, George Gardner, Route 1, Pikeville, N. C., Extension Chairman, G. Mark Goforth, Jr. and assistants, co-operating.

## Corn Silage

Area I - Northern Mountains

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

Area II - Southern Mountains

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

Area III - Piedmont

Chatham County, Jim and Gyles Brooks, Route 2, Siler City, N. C., Extension Chairman, John Cooper and assistants, co-operating.

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

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

Area IV - Coastal Plain

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

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

## Sorghum Silage

Alamance County

J. E. Farrell, Route 1, Mebane, N. C. Extension Chairman, G. R. Coble and assistants, co-operating.

Cabarrus County

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

Iredell County

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

## Grain Sorghum

Anson County

Boyce Winfield, Route 1, Polkton, N. C. Extension Chairman, John R. Potter, Jr. and assistants, co-operating.

Cabarrus County

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

Chatham County

Garvin Lindley, Route 1, Siler City, N. C., Extension Chairman, John Cooper and assistants, co-operating.

## Soybeans

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

Stanly County
D. G. Harwood, Route 1, New London, N. C., Extension Chiarman, V. A. Huneycutt and assistants, co-operating.

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

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

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

## Cotton

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

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

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

Rutherford County
Van McDaniels, Ellenboro, N. C., Extension Chairman, G. E. Biddix, Jr. and assistants, co-operating.

## CORN HYBRIDS

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

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

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

Results of the North Carolina Official Corn Trials for the 1969 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 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 1969 tests are shown in Table 1.

Table 1. Name and address of sponsoring agencies in the 1969 North Carolina Corn Performance Trials along with designation used to identify the hybrids in the trials.

| Name | Address | Hybrid Designation |
|---|---|---|
| Asgrow Seed Company | Atlanta 2, Georgia | Asgrow |
| Clark Seed Company, Inc. | Kenton, Delaware | Clark |
| Coker's Pedigreed Seed Co. | Hartsville, S. C. | Coker |
| Excel Seed Company | Plainview, Texas | Excel E |
| Fla. Agric. Expt. Sta. | Gainesville, Florida | Florida |
| Greenwood Seed Co. | Thomasville, Georgia | Greenwood's |
| McCurdy Seed Co., Inc. | Fremont, Iowa | McCurdy |
| McNair Seed Co., Inc. | Laurinburg, N. C. | McNair |
| N. C. Agric. Expt. Sta. | Raleigh, N. C. | N. C. and Dixie |
| Northrup King & Co. | Minneapolis, Minn. | NK |
| Ohio & Michigan Seed Co. | Green Spring, Ohio | GS Brand |
| P-A-G Division, W. R. Grace | Aurora, Illinois | P-A-G |
| Pioneer Corn Company, Inc. | Tipton, Indiana | Pioneer |
| Stull Brothers, Inc. | Sebree, Kentucky | Stull |

Table 1. Continued.

| Name | Address | Hybrid Designation |
|---|---|---|
| S. C. Agric. Expt. Sta. | Clemson, S. C. | S. C. |
| Speight Seed Farms | Winterville, N. C. | Speight |
| Todd Hybrid Sales, Inc. | Abbottstown, Pa. | 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 1969 tests were planted 7 inches in the drill. Soil tests were made and fertilization was applied in accordance with

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

In field design a randomized complete block was used. In the full season, Northern Coastal Plain Area, entries were planted according to maturity dates. Data were analyzed by locations and combined over locations within an area.

A cone hopper was mounted on a John Deere Planter and the tests were mechanically planted. Fifty percent extra kernels were planted and the plots were thinned to plants 12 inches apart in the row for the Piedmont, 10 inches for all other full season and 7 inches for the short season tests. Row width of the various tests was 38 inches. The plots were two rows wide and 15 feet long with 28 kernels planted per row, except for the short season tests, which had 40 kernels per row. The alley width was 6 feet which was required for mechanical planting and harvesting. Plants were thinned to give 16,500 (Coastal Plain and Mountain Area), 23,500 (Short Season) and 13,700 for the Piedmont Area.

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. AAtrex was the herbicide used on most tests at planting. At layby, 2, 4-D and Lorox or AAtrex were applied to control late grass and broadleaf weeds using nitrogen solution as the carrier. Excellent weed control was obtained in most tests. Cultural practices for each of the tests are shown in Table 2. Planting, collecting data and harvesting were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

Table 2. Cultural practices used on the corn test. 1969

| Area and Co-operator | Fertilizer lbs/A and Grade | | Herbicide[1/] Preemergence | Top-dressing lbs/A of N. and Source | Row Spacing Inches | Date of Planting | Date of Harvest |
|---|---|---|---|---|---|---|---|
| Area I | | | | | | | |
| Upper Mt. Res. Sta. | 400 | 10-20-20 Broadcast | AAtrex | 168 | 38" | May 28 | October 28 |
| Dana G. Tugman | 100 | 10-20-20 In Row | Sutan | Ammonium Nitrate | | | |
| Area II | | | | | | | |
| Lower Mt. Res. Sta. | 300 | 5-10-10 Broadcast | AAtrex | 100 | 38" | May 21 | November 13 |
| J. R. Edwards | 100 | 5-10-10 In Row | | Ammonium Nitrate | | | |
| Area III | | | | | | | |
| Raymond Braxton | 600 | 5-10-10 In Row | AAtrex | 175 | 38" | April 28 | October 6 |
| Alamance County | | | | Ammonium Nitrate | | | |
| A. W. Green | 900 | 4-12-12 Broadcast | AAtrex | 175 | 38" | April 29 | Test Discarded |
| Cleveland County | 100 | 10-20-20 In Row | | Ammonium Nitrate | | | |
| D. G. Harwood | 500 | 5-10-10 Broadcast | AAtrex | 175 | 38" | April 24 | September 30 |
| Stanly County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Kester Sink | 750 | 10-10-10 Broadcast | AAtrex | 175 | 38" | April 21 | October 10 |
| Surry County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Area IV | | | | | | | |
| Varsar Bullard | 500 | 3-9-18 Broadcast | AAtrex | 175 | 38" | March 26 | September 1 |
| Robeson County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Clem T. Grady | 600 | 6-6-12 In Row | AAtrex | 100 | 38" | April 22 | September 10 |
| Jones County | | | | Anhydrous Ammonia | | | |
| | | | | 75 | | | |
| | | | | Nitrogen Solution | | | |
| James W. Jackson | 600 | 5-10-10 Broadcast | AAtrex | 175 | 38" | March 26 | September 2 |
| Sampson County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Mrs. Tim Rivenbark | 600 | 6-6-12 In Row | AAtrex | 175 | 38" | April 3 | September 10 |
| Pender County | | | | Ammonium Nitrate | | | |
| Area V | | | | | | | |
| C. X. James | 600 | 8-24-24 In Row | AAtrex | 175 | 38" | April 9 | September 4 |
| Pitt County | | | | Nitrogen Solution | | | |
| J. C. Long | 650 | 5-10-10 Broadcast | AAtrex | 175 | 38" | April 9 | September 9 |
| Northampton County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Melvin Smiley | 800 | 5-10-10 Broadcast | AAtrex | 175 | 38" | April 10 | Test Discarded |
| Edgecombe County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Area VI | | | | | | | |
| Johnny Williams | 800 | 5-10-10 Broadcast | AAtrex | 220 | 38" | April 9 | August 26 |
| Camden County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| Robert L. Bunch | 700 | 3-9-18 Broadcast | AAtrex | 220 | 38" | April 9 | August 26 |
| Chowan County | 100 | 10-20-20 In Row | | Nitrogen Solution | | | |
| George Gardner | 600 | 0-9-27 In Row | AAtrex | 220 | 38" | April 8 | August 29 |
| Wayne County | | | | Nitrogen Solution | | | |

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

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

## Seasonal Conditions

The 1969 growing season in North Carolina was generally favorable for both early and late planted corn. The state average yield increased from a low of 59 bushels per acre in 1968 to 72 bushels per acre in 1969. Good moisture conditions existed at most locations at planting time and a good stand was obtained at all locations. The season was generally favorable but in some Coastal Plain areas excess water caused damage. A dry October helped with harvesting and over 75 percent of the crop had been harvested by November 7.

The Ashe County Test was planted in bottom land and a good stand was obtained. This test location received normal moisture during the season and a minimum amount of lodging was observed.

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

In the Piedmont Area all of the four county tests had good moisture at the beginning of the growing season and average yields were recorded at these locations. Good stands were obtained at all locations. Alamance, Stanly and Surry County tests had good growing conditions. Cleveland was discarded because of excess dry weather. In general, yields were above previous years.

In the Southern Coastal Plain Area the Jones, Pender, Robeson and Sampson County locations had good stands and fair growing conditions throughout the growing season with normal yields recorded at each location. The Pender County location was grown under excellent conditions with above average yields.

Good growing conditions existed in the Northern Coastal Plain for both the full season and short season tests. Good stands were obtained at all locations and fair to good yields were also reported. The Edgecombe County Test was damaged by farm animals late in the season after the replanting date had expired. The three short season locations, Camden, Chowan and Wayne, were above average with the Wayne test showing the best growing conditions.

## Data

Data were collected on each plot location on yield, stand, moisture lodging, ear height and quality. Statistical analyses were made on each of the above listed characters for individual locations and combined over locations within an area. The C.V. and L.S.D.'s are listed at the bottom of the various columns of the 1969 tables. Variety x locations mean squares were used to compute the L.S.D.'s. Comparisons of hybrids should be made only within areas and not between areas since soil and climatic conditions differ so greatly.

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

### Stand and Yield Adjustments

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

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

### Yield

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

Stand

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

Moisture at Harvest

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

Lodging

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

Ear Height

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

Quality

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

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

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

Diseases

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

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

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 overall performance.

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

The 1969 tests for all areas represented only fair growing conditions especially for the moisture problem in the Piedmont Area. The performance should be representative of the hybrids under these conditions. Comparisons can be made directly in these summary tables. Hybrids with a low percent of lodging in these tests would be considered to have a good root system and strong stalk.

Short season corn is early maturing and is usually sufficiently dry to be harvested and marketed 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 to the northeastern counties. One short season location was planted in Wayne County and excellent weather conditions were experienced. The short season corn is primarily grown for early market. The keeping quality of the short season hybrids is usually inferior, and unless the grower exercises extra precautions, the quality and feed value are likely to deteriorate rapidly from insect damage. Short season hybrids are usually less suitable for storing on the farm because of this rapid deterioration.

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

Table 3. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Three Year Average - 1967, 1968, 1969

Average of 3 Locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 3369 | 113 | 85 | 18.96 | 1 | 44 | 2.2 |
| Pioneer 3306 | 112 | 87 | 23.27 | 1 | 47 | 2.7 |
| Mean of Test | 97 | 81 | 23.21 | 2 | 48 | 2.5 |
| McNair X202 | 96 | 81 | 23.29 | 1 | 48 | 2.1 |
| V.P.I. 648 | 88 | 77 | 23.80 | 6 | 49 | 2.5 |

Table 4. Comparison of hybrids for certain characteristics

Piedmont - Area III

Three-Year Average - 1967, 1968, 1969

Average of 11 Locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| McNair 440V | 89 | 99 | 22.92 | 3 | 45 | 1.5 |
| Pioneer 309B | 86 | 98 | 21.35 | 7 | 43 | 1.7 |
| Coker 52 | 85 | 99 | 21.97 | 3 | 43 | 1.5 |
| Pioneer 3048 | 85 | 98 | 23.25 | 6 | 48 | 2.0 |
| Dixie 82 | 81 | 98 | 22.70 | 8 | 56 | 1.9 |
| McCurdy M306 | 81 | 99 | 23.00 | 7 | 53 | 2.0 |
| N.C. 27 | 80 | 99 | 21.92 | 8 | 54 | 1.7 |
| N.C. 270 | 79 | 97 | 24.90 | 7 | 51 | 1.7 |
| Mean of Test | 77 | 98 | 21.63 | 6 | 45 | 2.0 |
| McCurdy M97 | 76 | 99 | 20.60 | 7 | 45 | 1.8 |
| McNair 340V | 76 | 99 | 22.28 | 6 | 43 | 1.7 |
| Wagwood 306 | 76 | 96 | 21.48 | 6 | 42 | 1.7 |
| SC 236 | 73 | 97 | 22.85 | 3 | 51 | 1.6 |
| | | White Entries | | | | |
| Dixie 29 | 82 | 97 | 22.26 | 9 | 48 | 2.0 |
| Coker 912 | 82 | 99 | 20.96 | 7 | 46 | 2.0 |
| | | Experimental Hybrids Yellow Entries | | | | |
| NC 6019 | 88 | 98 | 22.77 | 4 | 46 | 1.6 |
| NC 1057 | 81 | 98 | 23.33 | 2 | 48 | 2.1 |

Table 5. Comparison of hybrids for certain characteristics

Southern Coastal Plain - Area IV

Three Year Average - 1967, 1968, 1969

Average of 10 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Height Inches | Quality |
|---|---|---|---|---|---|---|
| McNair 440V | 114 | 97 | 21.08 | 10 | 45 | 1.7 |
| Florida 200A | 109 | 98 | 22.48 | 7 | 56 | 1.5 |
| Dixie 18 | 107 | 95 | 21.96 | 12 | 58 | 1.6 |
| S.C. 236 | 107 | 96 | 21.47 | 6 | 51 | 1.6 |
| P-A-G 751 | 107 | 97 | 21.40 | 9 | 50 | 1.8 |
| Coker 74 | 101 | 98 | 23.33 | 3 | 46 | 1.7 |
| Coker 52 | 100 | 97 | 21.38 | 5 | 42 | 1.8 |
| N.C. 270 | 100 | 96 | 23.31 | 11 | 51 | 2.1 |
| Mean of Test | 100 | 96 | 21.67 | 9 | 47 | 2.0 |
| Dixie 82 | 99 | 96 | 21.57 | 15 | 55 | 2.3 |
| McNair 340V | 93 | 97 | 20.79 | 8 | 41 | 1.8 |
| White Entries | | | | | | |
| Coker 911 | 109 | 97 | 21.71 | 7 | 50 | 1.9 |
| Dixie 29 | 96 | 94 | 20.64 | 13 | 46 | 2.2 |
| Experimental Hybrids Yellow Entries | | | | | | |
| NC 1057 | 109 | 95 | 22.48 | 5 | 49 | 2.3 |

Table 6. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area V

Three Year Average - 1967, 1968, 1969

Average of 8 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 309B | 108 | 98 | 22.99 | 9 | 41 | 1.6 |
| Coker 52 | 107 | 98 | 24.11 | 3 | 41 | 1.5 |
| McNair 440V | 106 | 99 | 25.26 | 7 | 45 | 1.6 |
| McCurdy M306 | 103 | 97 | 24.80 | 10 | 55 | 2.2 |
| N.C. 270 | 101 | 99 | 27.27 | 10 | 50 | 2.1 |
| Mean of Test | 101 | 98 | 24.48 | 10 | 47 | 1.9 |
| Pioneer 3048 | 100 | 98 | 25.29 | 12 | 49 | 1.9 |
| Dixie 82 | 99 | 98 | 25.68 | 19 | 54 | 2.1 |
| S.C. 236 | 99 | 97 | 26.16 | 7 | 52 | 1.8 |
| McNair 340V | 99 | 98 | 24.72 | 6 | 44 | 1.7 |
| White Entries | | | | | | |
| Coker 911 | 106 | 99 | 24.86 | 10 | 50 | 2.1 |
| Dixie 29 | 100 | 97 | 23.28 | 13 | 48 | 2.4 |
| Experimental Hybrids Yellow Entries | | | | | | |
| NC 6019 | 109 | 100 | 25.46 | 6 | 46 | 1.6 |
| NC 1057 | 102 | 96 | 26.21 | 10 | 49 | 2.1 |

Table 7. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area VI

Three Year Average - 1967, 1968, 1969

Average of 7 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 3306 | 113 | 98 | 22.41 | 8 | 35 | 1.7 |
| McCurdy M97 | 112 | 98 | 24.26 | 12 | 39 | 1.9 |
| P-A-G SX29 | 106 | 97 | 22.80 | 6 | 34 | 1.8 |
| Mean of Test | 101 | 96 | 23.35 | 9 | 34 | 2.1 |
| V.P.I. 648 | 87 | 97 | 24.23 | 13 | 37 | 2.1 |

Table 8. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Two Year Average - 1968, 1969

Average of 2 Locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 3306 | 122 | 82 | 21.00 | 0 | 48 | 2.4 |
| Pioneer 3369 | 118 | 78 | 18.56 | 0 | 46 | 2.4 |
| McCurdy 67 x 53 | 118 | 74 | 24.42 | 1 | 51 | 2.1 |
| McNair X202 | 102 | 74 | 21.50 | 0 | 47 | 2.0 |
| Mean of Test | 102 | 74 | 21.84 | 1 | 47 | 2.3 |
| NK PX616 | 101 | 75 | 19.38 | 1 | 45 | 2.4 |
| NK PX72 | 100 | 72 | 22.97 | 0 | 45 | 2.8 |
| V.P.I. 648 | 88 | 69 | 22.28 | 6 | 49 | 2.4 |
| McNair S-140 | 84 | 74 | 19.58 | 1 | 46 | 3.0 |

Table 9. Comparison of hybrids for certain characteristics

Piedmont - Area III

Two-Year Average - 1968, 1969

Average of 7 Locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| McNair 440V | 95 | 100 | 20.92 | 4 | 44 | 1.6 |
| McCurdy M306 | 91 | 100 | 21.02 | 6 | 52 | 2.0 |
| Pioneer 3048 | 91 | 100 | 21.27 | 6 | 47 | 2.0 |
| Pioneer 309B | 90 | 98 | 19.26 | 7 | 42 | 1.8 |
| Coker 52 | 89 | 100 | 19.72 | 3 | 42 | 1.7 |
| Dixie 82 | 88 | 100 | 20.72 | 10 | 54 | 2.1 |
| N.C. 270 | 88 | 99 | 23.00 | 7 | 50 | 1.8 |
| Coker S48 | 88 | 98 | 19.62 | 6 | 40 | 2.0 |
| N.C. 27 | 86 | 100 | 20.40 | 9 | 54 | 2.0 |
| Pioneer 3369A | 85 | 100 | 17.51 | 3 | 38 | 2.4 |
| Wagwood 306 | 85 | 100 | 19.46 | 7 | 41 | 1.8 |
| S.C. 236 | 82 | 100 | 20.99 | 3 | 50 | 1.7 |
| Mean of Test | 82 | 100 | 19.72 | 6 | 44 | 2.0 |
| McCurdy M97 | 80 | 100 | 18.66 | 6 | 45 | 1.9 |
| McNair 340V | 78 | 99 | 20.50 | 6 | 42 | 1.8 |
| P-A-G SX 99 | 73 | 100 | 19.47 | 3 | 39 | 2.0 |
| | | White Entries | | | | |
| Dixie 29 | 88 | 100 | 20.35 | 10 | 48 | 2.4 |
| Coker 912 | 86 | 100 | 18.77 | 7 | 45 | 2.3 |
| | | Experimental Hybrids Yellow Entries | | | | |
| NC 6019 | 94 | 98 | 20.90 | 4 | 45 | 1.8 |
| McNair 6801 | 94 | 100 | 21.72 | 3 | 48 | 1.8 |
| NC 1057 | 87 | 98 | 21.34 | 2 | 48 | 2.4 |
| Coker X20 | 78 | 100 | 18.26 | 2 | 38 | 2.2 |

Table 10. Comparison of hybrids for certain characteristics

Southern Coastal Plain - Area IV

Two Year Average - 1968, 1969

Average of 7 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Height Inches | Quality |
|---|---|---|---|---|---|---|
| Florida 200A | 99 | 98 | 20.99 | 8 | 55 | 1.6 |
| Coker S48 | 99 | 98 | 18.64 | 5 | 40 | 2.0 |
| McNair 440V | 99 | 96 | 19.54 | 10 | 44 | 1.8 |
| S.C. 236 | 98 | 98 | 19.87 | 8 | 50 | 1.8 |
| Dixie 18 | 96 | 95 | 20.32 | 11 | 56 | 1.6 |
| P-A-G 751 | 95 | 98 | 20.28 | 8 | 50 | 2.0 |
| Pioneer 3123 | 95 | 98 | 23.66 | 2 | 43 | 3.0 |
| Coker 74 | 92 | 98 | 21.81 | 3 | 46 | 1.8 |
| Dixie 82 | 90 | 98 | 20.30 | 14 | 54 | 2.5 |
| Mean of Test | 90 | 97 | 20.34 | 8 | 46 | 2.2 |
| Coker 52 | 89 | 96 | 19.70 | 6 | 42 | 2.0 |
| McNair 340V | 86 | 97 | 19.28 | 9 | 42 | 2.0 |
| NC 270 | 84 | 96 | 21.96 | 10 | 50 | 2.4 |
| Asgrow ATC 450 | 80 | 96 | 20.98 | 12 | 49 | 2.0 |
| White Entries | | | | | | |
| Coker 911 | 98 | 98 | 20.30 | 6 | 50 | 2.1 |
| Dixie 29 | 88 | 96 | 19.14 | 12 | 46 | 2.6 |
| Experimental Hybrids Yellow Entries | | | | | | |
| McNair 6801 | 110 | 98 | 20.81 | 5 | 48 | 1.7 |
| NC 1057 | 96 | 94 | 20.80 | 6 | 48 | 2.6 |
| Greenwood 45 | 84 | 98 | 20.08 | 4 | 41 | 1.6 |

Table 11. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area V

Two Year Average - 1968, 1969

Average of 5 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 309B | 107 | 100 | 21.19 | 5 | 39 | 1.8 |
| Coker 52 | 107 | 98 | 22.56 | 2 | 38 | 1.8 |
| Coker S48 | 105 | 98 | 21.10 | 4 | 40 | 2.1 |
| McCurdy M306 | 104 | 100 | 23.32 | 4 | 52 | 2.4 |
| McNair 440V | 102 | 100 | 23.65 | 4 | 44 | 1.8 |
| Watson 199 | 100 | 98 | 22.07 | 2 | 40 | 2.4 |
| Mean of Test | 100 | 99 | 22.94 | 6 | 45 | 2.2 |
| S.C. 236 | 98 | 100 | 24.93 | 4 | 50 | 2.1 |
| Watson 401A | 98 | 100 | 20.68 | 6 | 38 | 2.4 |
| Dixie 82 | 97 | 100 | 24.49 | 14 | 52 | 2.6 |
| McNair 340V | 97 | 98 | 24.00 | 4 | 44 | 2.0 |
| Pioneer 3048 | 96 | 98 | 24.08 | 6 | 48 | 2.1 |
| N.C. 270 | 96 | 100 | 25.97 | 9 | 50 | 2.6 |
| Watson 430 | 96 | 99 | 20.55 | 2 | 40 | 2.4 |
| White Entries | | | | | | |
| Coker 911 | 103 | 100 | 23.26 | 6 | 49 | 2.6 |
| Dixie 29 | 102 | 100 | 21.99 | 8 | 46 | 2.9 |
| Experimental Hybrids Yellow Entries | | | | | | |
| McNair 6801 | 113 | 100 | 24.92 | 4 | 48 | 2.1 |
| NC 6019 | 106 | 100 | 24.12 | 4 | 44 | 1.8 |
| NC 1057 | 98 | 96 | 24.73 | 4 | 48 | 2.5 |

Table 12. Comparison of hybrids for certain characteristics

Northern Coastal Plain - Area VI

Two Year Average - 1968, 1969

Average of 4 locations

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| Pioneer 3369A | 117 | 100 | 19.00 | 5 | 34 | 2.0 |
| Asgrow A204 | 112 | 97 | 20.32 | 12 | 40 | 2.3 |
| McCurdy M97 | 111 | 100 | 21.34 | 10 | 38 | 2.2 |
| Pioneer 3306 | 106 | 100 | 18.92 | 8 | 34 | 1.9 |
| P-A-G SX29 | 102 | 99 | 19.80 | 4 | 32 | 1.8 |
| NK PX72 | 96 | 100 | 19.52 | 6 | 32 | 2.2 |
| Mean of Test | 96 | 98 | 20.30 | 6 | 34 | 2.2 |
| McNair S140 | 90 | 100 | 19.22 | 10 | 32 | 2.4 |
| NK PX616 | 88 | 100 | 19.12 | 6 | 32 | 2.4 |
| P-A-G SX31 | 80 | 97 | 18.35 | 6 | 28 | 2.6 |
| V.P.I. 648 | 79 | 100 | 21.28 | 6 | 36 | 2.2 |
| | | Experimental Hybrids Yellow Entries | | | | |
| Coker X20 | 115 | 100 | 22.12 | 2 | 34 | 2.1 |

Table 13. Comparison of hybrids for certain characteristics

Northern Mountains - Area I

Ashe County - 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| NK PX72 | 86 | 100 | 32.87 | 0 | 44 | 2.2 |
| V.P.I. 648 | 85 | 100 | 33.12 | 2 | 47 | 2.0 |
| Pioneer 3306 | 83 | 100 | 33.12 | 1 | 42 | 1.5 |
| Pioneer 3369A | 80 | 100 | 32.76 | 0 | 39 | 1.7 |
| Mean of Test | 80 | 100 | 32.95 | 1 | 44 | 1.9 |
| McCurdy 5 x 4 | 79 | 100 | 29.73 | 0 | 44 | 1.7 |
| NK PX616 | 77 | 100 | 33.64 | 0 | 44 | 2.2 |
| NK PX678 | 77 | 100 | 32.44 | 0 | 46 | 2.2 |
| *NC 8019 | 77 | 100 | 35.88 | 1 | 46 | 1.5 |
| L.S.D. (.05) | 13 | N.S. | 2.14 | 2 | 4 | .8 |
| (.01) | 17 | N.S. | 2.81 | 2 | 5 | 1.0 |
| C.V. ( % ) | 14 | | 6 | | 8 | 36 |

*Experimentals

Table 14. Comparison of hybrids for certain characteristics

Southern Mountains - Area II

Haywood County - 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | | Commercial Hybrids Yellow Entries | | | |
| McNair X210V (6905) | 141 | 74 | 21.97 | 0 | 46 | 1.3 |
| McCurdy 67 x 53 | 134 | 76 | 22.82 | 0 | 54 | 1.5 |
| McCurdy 67 x 51 | 134 | 77 | 26.64 | 1 | 48 | 1.0 |
| McNair X204 | 131 | 80 | 20.65 | 0 | 50 | 2.3 |
| Pioneer 3369 | 131 | 79 | 18.90 | 0 | 48 | 2.7 |
| NK PX678 | 131 | 83 | 20.74 | 0 | 54 | 1.7 |
| Pioneer 3306 | 130 | 84 | 19.23 | 0 | 48 | 2.0 |
| NK PX72 | 123 | 79 | 21.58 | 1 | 46 | 1.8 |
| NK PX616 | 122 | 86 | 19.07 | 0 | 46 | 2.2 |
| McCurdy 14 x 22 | 121 | 79 | 27.54 | 0 | 50 | 1.0 |
| McNair X100 | 114 | 84 | 17.66 | 3 | 46 | 1.7 |
| Mean of Test | 113 | 75 | 21.06 | 1 | 48 | 1.8 |
| McNair X202 | 108 | 76 | 19.70 | 0 | 48 | 2.2 |
| Excel E8244 | 89 | 68 | 20.99 | 1 | 46 | 1.5 |
| McNair S-190 | 89 | 68 | 18.93 | 1 | 46 | 2.2 |
| McNair S-140 | 86 | 77 | 19.22 | 1 | 48 | 2.0 |
| V.P.I. 648 | 82 | 65 | 20.45 | 11 | 50 | 1.8 |
| McNair 198 | 64 | 47 | 19.67 | 0 | 43 | 1.8 |
| L.S.D. (.05) | 30 | 16 | 1.57 | 4 | 3 | .7 |
| (.01) | 40 | 21 | 2.07 | 5 | 4 | 1.0 |
| C.V. ( % ) | 24 | 19 | 7 | | 6 | 36 |

Table 15. Comparison of hybrids for certain characteristics

Piedmont Area III

Stanly, Surry and Alamance Counties 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | | Commercial Hybrids | | | |
| | | | Yellow Entries | | | |
| McNair 440V | 115 | 100 | 22.04 | 2 | 47 | 1.8 |
| McCurdy M306 | 105 | 100 | 21.88 | 2 | 57 | 2.2 |
| N.C. 270 | 104 | 100 | 23.46 | 4 | 52 | 2.0 |
| Dixie 82 | 103 | 100 | 20.65 | 3 | 58 | 2.2 |
| Excel E-944 | 101 | 100 | 20.36 | 3 | 54 | 2.0 |
| Excel E-1022A | 101 | 96 | 21.06 | 5 | 56 | 1.8 |
| Wagwood 306 | 100 | 100 | 20.19 | 5 | 43 | 1.7 |
| Pioneer 3048 | 100 | 100 | 23.28 | 3 | 51 | 2.2 |
| Coker 52 | 100 | 100 | 20.46 | 2 | 44 | 1.8 |
| N.C. 27 | 99 | 100 | 20.41 | 7 | 59 | 1.9 |
| Pioneer 309B | 98 | 97 | 20.28 | 5 | 44 | 1.8 |
| McNair X204 | 95 | 100 | 18.60 | 2 | 42 | 2.0 |
| Coker S48 | 94 | 99 | 20.91 | 2 | 40 | 1.8 |
| S.C. 236 | 91 | 99 | 21.22 | 2 | 52 | 1.8 |
| Mean of Test | 91 | 99 | 20.42 | 3 | 46 | 1.9 |
| McNair X210V (6905) | 89 | 100 | 19.41 | 1 | 41 | 1.8 |
| Pioneer 3369A | 85 | 100 | 18.87 | 1 | 39 | 1.8 |
| McCurdy M97 | 85 | 100 | 19.03 | 3 | 48 | 1.7 |
| McNair 340V | 84 | 98 | 21.30 | 2 | 44 | 1.8 |
| Pioneer 3191 | 81 | 100 | 19.79 | 2 | 43 | 2.0 |
| P-A-G SX99 | 81 | 100 | 20.29 | 2 | 41 | 2.1 |
| Stull 720SX | 78 | 100 | 18.63 | 2 | 40 | 1.4 |
| Todd M70 | 77 | 98 | 19.05 | 6 | 31 | 1.7 |
| P-A-G 437 | 75 | 100 | 18.37 | 3 | 39 | 1.8 |
| McNair X202 | 73 | 100 | 18.83 | 3 | 40 | 1.8 |
| Wagwood 400A | 62 | 100 | 18.62 | 4 | 38 | 1.7 |
| Todd 92A | 62 | 99 | 18.81 | 7 | 39 | 1.8 |
| | | | White Entries | | | |
| Excel E-903W | 102 | 99 | 20.06 | 4 | 52 | 2.0 |
| Dixie 29 | 100 | 100 | 21.41 | 2 | 51 | 1.8 |
| Coker 912 | 98 | 100 | 19.96 | 3 | 47 | 1.8 |
| McNair 425 | 98 | 93 | 21.65 | 4 | 50 | 1.8 |
| McNair 225 | 82 | 99 | 19.22 | 3 | 42 | 2.1 |
| | | | Experimental Hybrids | | | |
| | | | Yellow Entries | | | |
| McNair 6801 | 109 | 100 | 22.47 | 1 | 49 | 1.8 |
| NC 6019 | 105 | 97 | 21.46 | 3 | 48 | 2.1 |
| NC 1057 | 99 | 97 | 22.66 | 2 | 53 | 2.8 |
| Coker X20 | 76 | 99 | 19.71 | 1 | 38 | 1.7 |
| L.S.D. (.05) | 21 | 4 | 1.16 | 3 | 4 | .5 |
| (.01) | 27 | 5 | 1.52 | 5 | 6 | .7 |
| C.V. ( % ) | 16 | 4 | 7 | | 8 | 29 |

Table 16. Comparison of hybrids for certain characteristics

Southern Coastal Plain Area IV

Robeson, Sampson, Pender and Jones Counties 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| Fla. 200A | 113 | 100 | 20.04 | 6 | 61 | 1.4 |
| S.C. 236 | 111 | 100 | 19.44 | 5 | 55 | 1.7 |
| Dixie 18 | 110 | 99 | 19.68 | 9 | 63 | 1.6 |
| P-A-G 751 | 110 | 100 | 19.55 | 9 | 54 | 2.0 |
| Coker S48 | 107 | 98 | 18.28 | 2 | 42 | 2.3 |
| Coker 74 | 106 | 98 | 21.02 | 4 | 48 | 1.8 |
| McNair 440V | 104 | 98 | 19.57 | 13 | 47 | 1.9 |
| McCurdy 67 x 33 | 101 | 100 | 19.59 | 17 | 54 | 2.1 |
| Pioneer 3123 | 100 | 100 | 23.37 | 2 | 44 | 2.9 |
| N.C. 270 | 99 | 100 | 20.96 | 13 | 56 | 2.2 |
| Coker 52 | 99 | 97 | 19.12 | 6 | 43 | 1.8 |
| Dixie 82 | 99 | 99 | 19.72 | 18 | 60 | 2.6 |
| Mean of Test | 99 | 99 | 19.67 | 9 | 50 | 2.2 |
| P-A-G 492 | 98 | 99 | 18.83 | 5 | 43 | 2.6 |
| P-A-G 748 | 97 | 100 | 20.14 | 8 | 49 | 2.1 |
| Pioneer 3191 | 94 | 97 | 18.10 | 2 | 41 | 2.4 |
| Excel E-1022 | 92 | 97 | 19.62 | 12 | 55 | 2.2 |
| McNair 340V | 91 | 99 | 19.38 | 12 | 44 | 2.2 |
| Asgrow ATC 450 | 91 | 99 | 20.27 | 14 | 55 | 2.1 |
| Stull 720 SX | 78 | 99 | 17.58 | 2 | 40 | 3.3 |
| | | White Entries | | | | |
| Coker 911 | 112 | 100 | 19.37 | 7 | 53 | 2.2 |
| McNair 425 | 101 | 96 | 19.66 | 12 | 54 | 2.6 |
| Dixie 29 | 93 | 100 | 18.22 | 14 | 50 | 2.4 |
| McNair 225 | 81 | 95 | 17.46 | 11 | 41 | 2.8 |
| | | Experimental Hybrids Yellow Entries | | | | |
| McNair 6801 | 121 | 100 | 20.58 | 5 | 54 | 1.8 |
| NC 1057 | 108 | 96 | 20.21 | 5 | 53 | 2.7 |
| Greenwood 8228 | 93 | 99 | 19.39 | 4 | 45 | 1.9 |
| Speight D-14A | 88 | 99 | 21.75 | 19 | 49 | 2.3 |
| Greenwood 45 | 85 | 100 | 19.79 | 4 | 41 | 1.9 |
| L.S.D. (.05) | 14 | 3 | .82 | 11 | 4 | .5 |
| (.01) | 18 | 4 | 1.07 | 14 | 5 | .6 |
| C.V. ( % ) | 15 | 5 | 6 | | 10 | 25 |

Table 17. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area V

Northampton and Pitt Counties 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| Pioneer 309B | 97 | 99 | 21.29 | 4 | 36 | 1.6 |
| P-A-G 492 | 97 | 98 | 21.53 | 5 | 41 | 2.5 |
| Pioneer 309C | 96 | 99 | 21.60 | 8 | 36 | 1.8 |
| McNair 440V | 95 | 100 | 22.79 | 1 | 41 | 1.9 |
| Coker S48 | 92 | 96 | 20.88 | 5 | 36 | 1.8 |
| Watson 199 | 91 | 95 | 21.98 | 3 | 38 | 2.2 |
| Watson 428 | 90 | 100 | 21.48 | 1 | 37 | 2.1 |
| McCurdy M306 | 89 | 100 | 23.87 | 3 | 49 | 2.1 |
| Coker 52 | 88 | 97 | 21.71 | 1 | 37 | 1.2 |
| S.C. 236 | 88 | 100 | 24.66 | 0 | 48 | 2.2 |
| Mean of Test | 87 | 98 | 22.47 | 4 | 41 | 2.2 |
| Watson 430 | 86 | 98 | 20.32 | 3 | 38 | 2.2 |
| Watson 401A | 86 | 99 | 20.82 | 8 | 35 | 2.2 |
| McNair 340V | 85 | 96 | 23.82 | 4 | 40 | 1.9 |
| Pioneer 3191 | 85 | 97 | 20.33 | 5 | 35 | 2.1 |
| Dixie 82 | 85 | 99 | 24.06 | 7 | 48 | 2.6 |
| N.C. 270 | 84 | 100 | 26.05 | 5 | 47 | 2.4 |
| Todd M 90 | 81 | 99 | 18.30 | 11 | 36 | 2.4 |
| Pioneer 3048 | 80 | 97 | 23.77 | 5 | 44 | 2.0 |
| Asgrow ATC 450 | 78 | 100 | 23.96 | 3 | 45 | 2.5 |
| Todd M 70 | 75 | 99 | 20.33 | 7 | 24 | 2.0 |
| Excel 1022 | 74 | 99 | 24.40 | 3 | 47 | 2.5 |
| Todd 92A | 62 | 100 | 18.09 | 12 | 31 | 3.0 |
| | | White Entries | | | | |
| Dixie 29 | 97 | 100 | 22.30 | 5 | 43 | 2.5 |
| Coker 911 | 89 | 99 | 22.44 | 5 | 46 | 2.6 |
| McNair 425 | 85 | 89 | 24.62 | 1 | 45 | 2.6 |
| | | Experimentals | | | | |
| NC 6019 | 97 | 100 | 24.25 | 1 | 41 | 1.9 |
| McNair 6801 | 95 | 99 | 25.22 | 3 | 45 | 1.9 |
| NC 1057 | 84 | 93 | 24.26 | 3 | 45 | 2.4 |
| L.S.D. (.05) | 20 | 5 | 2.16 | 8 | 4 | .6 |
| (.01) | 27 | 7 | 2.91 | 10 | 6 | .8 |
| C.V. ( % ) | 17 | 5 | 7 | | 8 | 26 |

Table 18. Comparison of hybrids for certain characteristics

Northern Coastal Plain Area VI Short Season

Chowan, Camden and Wayne Counties 1969

| Hybrid Designation | Yield Bus/A | Stand % | Moisture % | Lodging % | Ear Height Inches | Quality |
|---|---|---|---|---|---|---|
| | | Commercial Hybrids Yellow Entries | | | | |
| McCurdy 14 x 22 | 121 | 100 | 23.69 | 7 | 33 | 1.8 |
| McNair X210V (6905) | 114 | 99 | 21.87 | 3 | 31 | 2.1 |
| Pioneer 3369A | 108 | 100 | 20.39 | 4 | 31 | 1.8 |
| Clark SX707 | 108 | 100 | 21.50 | 4 | 26 | 2.6 |
| McCurdy M97 | 106 | 100 | 21.27 | 11 | 35 | 1.9 |
| Speight D24 | 105 | 98 | 22.25 | 10 | 32 | 1.8 |
| Pioneer 3306 | 104 | 99 | 19.12 | 11 | 31 | 1.8 |
| Hofmeyer's SX50 | 102 | 98 | 20.16 | 10 | 32 | 2.1 |
| Asgrow A-204 | 102 | 94 | 20.34 | 18 | 37 | 1.8 |
| McNair X204 | 102 | 100 | 20.64 | 15 | 35 | 1.8 |
| Pioneer 3516 | 99 | 100 | 18.78 | 4 | 27 | 2.1 |
| P-A-G SX29 | 96 | 100 | 20.28 | 5 | 32 | 1.9 |
| Mean of Test | 95 | 97 | 20.67 | 8 | 31 | 2.3 |
| McNair S140 | 93 | 100 | 19.69 | 10 | 30 | 2.9 |
| Northrup King PX 72 | 93 | 99 | 19.63 | 8 | 29 | 2.3 |
| McNair S190 | 92 | 99 | 19.46 | 7 | 31 | 2.7 |
| Northrup King PX 678 | 89 | 99 | 20.09 | 9 | 34 | 2.4 |
| Hofmeyer's SX51 | 88 | 100 | 21.08 | 4 | 30 | 2.5 |
| McNair X202 | 87 | 99 | 20.44 | 5 | 30 | 2.5 |
| GS Brand 761-A | 85 | 100 | 20.99 | 9 | 32 | 2.4 |
| Clark SX 723A | 85 | 100 | 18.88 | 6 | 25 | 2.2 |
| Asgrow IXL 9 | 84 | 85 | 21.54 | 8 | 29 | 2.2 |
| McNair X100 | 84 | 100 | 18.62 | 9 | 24 | 2.9 |
| V.P.I. 648 | 82 | 100 | 21.27 | 10 | 34 | 2.3 |
| Northrup King PX 616 | 81 | 99 | 19.39 | 11 | 27 | 2.7 |
| P-A-G 437 | 79 | 100 | 20.30 | 9 | 30 | 2.5 |
| McNair 198 | 75 | 52 | 19.88 | 7 | 26 | 2.8 |
| P-A-G SX31 | 75 | 100 | 19.68 | 7 | 25 | 2.8 |
| Clark SX145 | 67 | 100 | 19.75 | 8 | 22 | 2.9 |
| | | White Entries | | | | |
| McNair 225 | 89 | 99 | 22.09 | 9 | 33 | 2.8 |
| | | Experimental Hybrids Yellow Entries | | | | |
| NC 8019 | 116 | 100 | 23.74 | 9 | 40 | 1.9 |
| Coker X20 | 109 | 100 | 22.45 | 3 | 31 | 2.0 |
| L.S.D. (.05) | 19 | 5 | 1.20 | 7 | 3 | .7 |
| (.01) | 26 | 6 | 1.58 | 9 | 4 | .9 |
| C.V. ( % ) | 15 | 5 | 7 | | 10 | 31 |

## 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 grain. In 1969 all tests were conducted in the Piedmont Area. The 1969 acreage for North Carolina was estimated to be 39,000 acres, unchanged from 1968.

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 1969 season and summarizes the results of tests conducted during the past two and three years.

## EXPERIMENTAL PROCEDURE

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

Grain Sorghum production in North Carolina as of October 1, 1969 was estimated to be at 2,223,000 bushels. This was an increase of 21 percent over the 1968 crop of 1,833,000 bushels. A record yield of 57 bushels per

acre was predicted and this exceeds the previous record yield of 50 bushels per acre set in 1967.

| Agencies Sponsoring Entries | | Designation |
|---|---|---|
| Arkansas Agricultural Expt. Sta. | Fayetteville, Arkansas | AKS |
| Asgrow Seed Company | Atlanta, Georgia | Asgrow |
| DeKalb Agric. Research, Inc. | Lubbock, Texas | DeKalb |
| Excel Seed Company | Plainview, Texas | Excel |
| Georgia Agric. Expt. Sta. | Experiment, Georgia | Georgia |
| McCurdy Seed Company, Inc. | Fremont, Iowa | McCurdy |
| McNair Seed Company | Plainview, Texas | McNair |
| Pioneer Corn Company, Inc. | Tipton, Indiana | Pioneer |
| Todd Hybrid Sales, Inc. | Abbottstown, Pa. | Grain Harvest |
| George Warner Seed Co. | Hereford, Texas | Warner |

## Test Locations

Three locations were used in 1969 in the Piedmont as shown in Figure 1. Two tests were located on private farms and one on state institutional property. All were considered to be good grain sorghum tests for the 1969 season.

## Seasonal Conditions

The 1969 growing season was generally good for the production of grain sorghum. Good stands were obtained at the Anson, Chatham and Cabarrus locations. Yields were generally somewhat better than past years.

Grain Sorghum production in North Carolina for 1969 was up 21 percent from 1968 yields. The yield per acre is estimated at 57 bushels per acre, seven bushels above the record yield of 50 bushels per acre in 1967.

## Cultural Practices

Cultural practices, such as soil preparation, date of planting, fertilization and topdressing were in accord with good management and were the same for all entries at a location, Table 19. Planting and harvesting were directly supervised by personnel of the North Carolina Agricultural Experiment Station.

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

## Data

A randomized block design was used with four replications at each location. Plot size was two rows 25 feet long. The row width was 38 inches in each test.

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

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

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

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

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

Table 19. Cultural practices on grain sorghum performance trials. Piedmont. 1969

| Area and Co-operator | Fertilizer lbs/A and Grade | | | Herbicide[1/] Preemergence | Top-dressing lbs/A of N. and Source | Row Spacing Inches | Date of Planting | Date of Harvest |
|---|---|---|---|---|---|---|---|---|
| Anson County Boyce Winfield | 600 | 10-10-10 | In Row | AAtrex | 175 Nitrogen Solution | 38" | May 6 | September 4 |
| Cabarrus County James L. Query | 600 | 10-20-20 | In Row | AAtrex | 175 Nitrogen Solution | 38" | April 29 | September 4 |
| Chatham County Garvin Lindley | 600 | 10-20-20 | In Row | AAtrex | 175 Nitrogen Solution | 38" | April 14 | September 3 |

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

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

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

## Results

The data presented in Tables 20, 21 and 22 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 20. Entries ranged in yield from 5101 for DeKalb F-61 to 4382 pounds per acre for McNair 546.

The performance of entries during the last two years in the Piedmont is shown in Table 21. Yields ranged from a high of 5046 pounds per acre for DeKalb F-61 to 4378 for Pioneer 828.

A summary of the 1969 results for the Piedmont is shown in Table 22. Yields ranged from 5032 pounds per acre for Excel 733 to 3942 for Pioneer 828. Thirteen of the twenty entries yielded above the mean of the test which is indicative of their good performance. All data should be studied in evaluating varieties and hybrids. The data from these tests are probably representative of the performance of these hybrids since the tests were generally good and the season was generally favorable for the production of grain sorghum. However, data for more than one year should be utilized in determining the performance of hybrids.

Table 20. Performance of grain sorghum - Piedmont. Three year average 1967, 1968, 1969. Average of 8 locations.

| Entry | Yield Lbs/A | Moisture % | Days to Flower | Plant Height Inches | Head Exsertion Inches | Head Compactness |
|---|---|---|---|---|---|---|
| DeKalb F-61 | 5101 | 20.04 | 83 | 49 | 5 | 2.0 |
| AKS 614 | 4666 | 18.79 | 78 | 47 | 6 | 3.6 |
| Ga. 615 | 4640 | 19.36 | 81 | 51 | 5 | 3.6 |
| Pioneer 828 | 4453 | 20.43 | 87 | 51 | 5 | 1.9 |
| Mean of Test | 4434 | 19.25 | 82 | 47 | 5 | 2.5 |
| McNair 546 | 4382 | 18.73 | 81 | 45 | 5 | 3.6 |

Table 21. Performance of grain sorghum - Piedmont. Two year average 1968, 1969. Average of 6 locations.

| Entry | Yield Lbs/A | Moisture % | Days to Flower | Plant Height Inches | Head Exsertion Inches | Head Compactness |
|---|---|---|---|---|---|---|
| DeKalb F-61 | 5046 | 19.50 | 82 | 51 | 6 | 1.8 |
| McNair 652 | 4998 | 18.82 | 81 | 51 | 6 | 2.2 |
| DeKalb BR64 | 4856 | 19.28 | 85 | 54 | 6 | 2.8 |
| AKS 614 | 4668 | 18.52 | 78 | 49 | 6 | 3.0 |
| Asgrow Double TX | 4554 | 19.55 | 83 | 50 | 4 | 1.1 |
| McNair 546 | 4542 | 18.34 | 80 | 47 | 5 | 3.0 |
| Mean of Test | 4512 | 18.86 | 81 | 48 | 6 | 2.2 |
| Ga. 615 | 4470 | 19.09 | 80 | 52 | 6 | 2.8 |
| Pioneer 828 | 4378 | 19.70 | 84 | 54 | 6 | 1.4 |

Table 22. Performance of Grain Sorghum for certain characteristics - Piedmont. Chatham, Cabarrus and Anson Counties - 1969

| Entry | Yield Lbs/A | Moisture % | Days to Flower | Plant Height Inches | Head Exsertion Inches | Head Compactness |
|---|---|---|---|---|---|---|
| Excel 733 | 5032 | 20.76 | 77 | 49 | 5 | 2.0 |
| McNair 652 | 4911 | 20.28 | 80 | 51 | 4 | 2.2 |
| Asgrow Bravis | 4909 | 20.46 | 78 | 53 | 7 | 3.0 |
| Warner W758 | 4811 | 20.35 | 77 | 47 | 6 | 3.0 |
| McCurdy Bird-Off | 4805 | 20.19 | 76 | 49 | 4 | 3.0 |
| McNair 546 | 4790 | 20.23 | 78 | 48 | 5 | 3.0 |
| Bird Go | 4766 | 20.75 | 81 | 49 | 5 | 2.8 |
| AKS 614 | 4742 | 20.32 | 77 | 49 | 7 | 3.0 |
| Ga. 615 | 4653 | 20.58 | 77 | 50 | 5 | 2.8 |
| Grain Harvest 615 | 4616 | 20.44 | 79 | 55 | 6 | 2.9 |
| DeKalb F-61 | 4574 | 20.71 | 78 | 51 | 5 | 1.8 |
| DeKalb BR64 | 4570 | 20.50 | 83 | 51 | 4 | 2.8 |
| DeKalb C-42Y | 4567 | 20.55 | 78 | 54 | 7 | 2.8 |
| Mean of Test | 4557 | 20.51 | 79 | 49 | 5 | 2.6 |
| DeKalb E-57 | 4404 | 20.89 | 78 | 50 | 5 | 3.0 |
| Asgrow Double TX | 4403 | 20.45 | 79 | 47 | 4 | 1.1 |
| Pioneer XB 899 | 4304 | 20.49 | 79 | 44 | 4 | 3.0 |
| Warner 723 | 4150 | 20.42 | 78 | 52 | 5 | 2.8 |
| AKS 663 | 4106 | 20.79 | 79 | 51 | 5 | 3.0 |
| Pioneer 848 | 4085 | 20.47 | 78 | 41 | 4 | 2.9 |
| Pioneer 828 | 3942 | 20.61 | 81 | 50 | 4 | 1.7 |
| L.S.D. (.05) | 743 | .44 | 5 | 8 | 3 | .4 |
| (.01) | 976 | .58 | 6 | 11 | 4 | .5 |
| C.V. ( % ) | 15 | 2 | 3 | 7 | 19 | 14 |

Experimentals

## 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 provides 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 1969 season.

## EXPERIMENTAL PROCEDURE

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

| Agencies Sponsoring Entries | | Designation |
|---|---|---|
| Arkansas Agricultural Expt. Sta. | Fayetteville, Ark. | Leafmaster 43 (Sorghum) |
| Coker's Pedigreed Seed Company | Hartsville, S. C. | Coker (Corn) |
| DeKalb Agricultural Assoc., Inc. | DeKalb, Illinois | DeKalb (Sorghum) |
| McCurdy Seed Company, Inc. | Fremont, Iowa | Silokorn (Corn) |
| McNair Seed Company | Laurinburg, N. C. | McNair (Corn) |

| | | |
|---|---|---|
| N. C. Agric. Expt. Sta. | Raleigh, N. C. | N. C., Dixie, Sart (Corn & Sorghum) |
| Pioneer Corn Company, Inc. | Tipton, Indiana | Pioneer (Corn & Sorghum) |
| S. C. Agric. Expt. Sta. | Clemson, S. C. | S. C. (Corn) |
| Va. Polytechnic Institute | Blacksburg, Va. | V.P.I. (Corn) |
| Wagwood Farms, Inc. | Gibsonville, N. C. | Wagwood (Corn) |
| Watson Seed Farms | Rocky Mount, N. C. | Watson (Corn) |

## Test Locations

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

## Cultural Practices

Cultural practices, such as seed bed preparation, date of planting, fertilization, cultivation and harvesting were in accord with good farming practices and were the same for all entries in a given test. Table 23. Planting, harvesting and sampling were directly supervised by personnel of the North Carolina Agricultural 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 23. Cultural practices used on the corn and sorghum silage performance trials. 1969

| Area and Co-operator | Fertilizer lbs/A and Grade | Herbicide[1/] Preemergence | Top-dressing lbs/A of N. and Source | Row Spacing Inches | Date of Planting | Date of Harvest |
|---|---|---|---|---|---|---|
| | | **Corn Silage** | | | | |
| Area I | | | | | | |
| Ashe County<br>Dana G. Tugman | 400 10-20-20 Broadcast<br>100 10-20-20 In Row | AAtrex | 168<br>Ammonium Nitrate | 38" | May 28 | October 1 |
| Area II | | | | | | |
| Haywood County<br>J. R. Edwards | 300 5-10-10 Broadcast<br>100 5-10-10 In Row | AAtrex | 200<br>Ammonium Nitrate | 38" | May 21 | September 15 |
| Area III | | | | | | |
| Burke County<br>H. O. Beck | 500 0-25-25 Broadcast<br>100 10-20-20 In Row | AAtrex | 100<br>Ammonium Nitrate | 38" | April 29 | August 25 |
| Chatham County<br>Jim & Gyles Brooks | 300 4-24-24 Broadcast<br>100 2-12-12 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | May 1 | August 8 |
| Davie County<br>C. L. Blake | 1000 20-10-20 Broadcast<br>100 2-12-12 In Row | AAtrex | 60<br>Ammonium Nitrate | 38" | May 1 | August 22 |
| Area IV | | | | | | |
| Edgecombe County<br>Ernest Davenport | 450 0-9-27 Broadcast<br>100 10-20-20 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | April 1 | July 27 |
| Sampson County<br>M. F. Jackson | 650 20-5-10 Broadcast<br>100 10-20-20 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | March 26 | July 31 |
| | | **Sorghum Silage** | | | | |
| Alamance County<br>J. E. Farrell | 900 10-10-10 Broadcast<br>100 10-10-10 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | April 28 | August 28 |
| Iredell County<br>Ralph Gaither | 700 20-24-24 Broadcast<br>100 2-12-12 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | May 1 | August 28 |
| Cabarrus County<br>James L. Query | 600 10-20-20 In Row | AAtrex | 175<br>Nitrogen Solution | 38" | April 29 | Discarded |

[1/] Topdressed with Nitrogen Solution and 1/3 lb. active 2, 4-D (14 fl. oz. of weedone 638) in both corn and sorghum silage tests. When needed 0.62 lb. active Linuron/A (1½ lb. Lorox 50 WP) or 1 lb. active Atrazine/A (1¼ lb. Atrazine 80 WP) was used at layby to control grass in the corn test.

## Seasonal Conditions

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

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

In the Northern Mountains Test at Laurel Springs, the corn was planted on May 28. The mean yield of the test was 17.3 in 1969 compared with 11.8 tons per acre in 1968.

The Haywood County Test had a good stand and the mean of test was 18.8 tons per acre compared to 15.9 for 1968. The three Piedmont tests averaged approximately the same as in 1968. The Coastal Plain Tests had a good stand and good moisture during the growing season with good yields at harvest.

## Criteria for Evaluating Silage Entries

A randomized block design with four replications was used for each test. The plots consisted of one row 25 feet long. Spacing within the row was approximately 8 inches for corn and 2 inches for sorghum. Row widths are shown in Table 23.

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

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

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

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

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

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

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

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

Plant Height. Height of plants was measured in inches.

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

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

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

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

## RESULTS

### Corn Silage and Sorghum Silage

The corn silage data are presented by areas in Table 32 through 35. The data in Table 24 through 27 are summaries over a three-year period for

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

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

The sorghum silage, conducted in the Piedmont for 1967, 1968 and 1969 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 24. Performance of corn silage - Northern Mountains - Area I. Ashe County - Three year average 1967-1968-1969. Average of 3 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean of Test | 13.7 | 76.7 | 4.8 | 8.8 | 4.9 | 26.2 | 61.3 | 50.8 | 55 | 119 | 95 | 1 |
| V.P.I. 648 | 12.9 | 74.6 | 4.5 | 8.9 | 4.9 | 23.5 | 63.2 | 53.4 | 55 | 119 | 92 | 0 |

Table 25. Performance of corn silage - Southern Mountains - Area II. Haywood County - Three year average 1967-1968-1969. Average of 3 locations

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NC 270 | 21.0 | 78.3 | 7.3 | 8.4 | 4.4 | 26.7 | 61.0 | 50.3 | 69 | 138 | 79 | 2 |
| Mean of Test | 17.8 | 78.0 | 6.2 | 8.3 | 4.4 | 26.6 | 61.0 | 50.4 | 62 | 130 | 78 | 1 |

Table 26. Performance of corn silage - Piedmont - Area III. Three Year Average - 1967-1968-1969. Average of 8 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NC 270 | 16.2 | 72.7 | 5.7 | 9.2 | 5.2 | 25.2 | 62.0 | 51.8 | 56 | 117 | 97 | 7 |
| Dixie 82 | 16.0 | 69.1 | 5.6 | 9.2 | 5.2 | 25.7 | 61.7 | 51.3 | 60 | 120 | 95 | 8 |
| *NC 1057 | 15.5 | 73.6 | 5.4 | 8.8 | 4.9 | 25.6 | 61.8 | 51.4 | 52 | 109 | 96 | 4 |
| Pioneer 3009 | 15.2 | 71.4 | 5.3 | 8.9 | 4.9 | 26.0 | 61.5 | 51.0 | 52 | 114 | 94 | 4 |
| Coker 912 | 14.9 | 69.7 | 5.2 | 9.3 | 5.3 | 23.4 | 63.2 | 53.5 | 52 | 110 | 96 | 6 |
| McNair 440V | 14.8 | 69.7 | 5.2 | 9.2 | 5.2 | 24.4 | 62.5 | 52.5 | 50 | 106 | 92 | 6 |
| Coker 52 | 14.7 | 60.5 | 5.2 | 9.6 | 5.6 | 25.5 | 61.8 | 51.5 | 48 | 105 | 98 | 5 |
| Mean of Test | 14.5 | 70.5 | 5.1 | 9.0 | 5.0 | 24.6 | 62.4 | 52.4 | 52 | 111 | 94 | 7 |
| Pioneer 3048 | 14.3 | 72.4 | 5.0 | 8.7 | 4.8 | 25.7 | 61.6 | 51.3 | 54 | 114 | 95 | 5 |
| Dixie 29 | 13.2 | 68.8 | 4.6 | 8.7 | 4.8 | 22.9 | 63.6 | 53.9 | 54 | 113 | 88 | 12 |

Table 27. Performance of corn silage - Southern Coastal Plain - Area IV. Three Year Average - 1967-1968-1969. Average of 5 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SC 236 | 17.4 | 65.9 | 6.1 | 8.7 | 4.7 | 24.8 | 62.3 | 52.2 | 53 | 115 | 97 | 4 |
| Dixie 18 | 17.1 | 67.5 | 6.0 | 9.0 | 5.0 | 24.8 | 62.3 | 52.1 | 60 | 118 | 98 | 10 |
| NC 270 | 16.1 | 69.3 | 5.7 | 9.3 | 5.3 | 25.0 | 62.2 | 52.0 | 53 | 116 | 98 | 8 |
| McNair 440V | 15.7 | 67.0 | 5.5 | 9.5 | 5.5 | 25.8 | 61.6 | 51.2 | 48 | 104 | 99 | 4 |
| Mean of Test | 15.6 | 66.9 | 5.5 | 9.2 | 5.2 | 25.0 | 62.2 | 52.0 | 51 | 109 | 97 | 6 |
| *NC 1057 | 15.3 | 68.9 | 5.4 | 8.9 | 5.0 | 26.9 | 60.8 | 50.2 | 50 | 105 | 95 | 6 |
| Coker 911 | 15.0 | 68.4 | 5.3 | 9.7 | 5.7 | 23.4 | 63.2 | 53.5 | 50 | 105 | 98 | 5 |
| Coker 52 | 14.6 | 65.4 | 5.1 | 10.1 | 6.1 | 23.4 | 63.2 | 53.5 | 42 | 98 | 97 | 4 |

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

Table 28. Performance of corn silage - Northern Mountains - Area I. Ashe County - Two year average 1968-1969. Average of 2 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean of Test | 14.6 | 76.4 | 5.0 | 8.1 | 4.2 | 26.4 | 61.2 | 50.6 | 61 | 124 | 96 | 1 |
| V.P.I. 648 | 14.2 | 74.2 | 5.0 | 8.0 | 4.2 | 23.6 | 63.1 | 53.4 | 60 | 125 | 98 | 0 |

Table 29. Performance of corn silage - Southern Mountains - Area II. Haywood County - Two year average 1968-1969. Average of 2 locations

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NC 270 | 20.6 | 78.8 | 7.2 | 8.0 | 4.0 | 26.4 | 61.2 | 50.6 | 67 | 138 | 73 | 4 |
| Mean of Test | 17.4 | 78.2 | 6.1 | 8.0 | 4.1 | 26.6 | 61.0 | 50.4 | 64 | 130 | 72 | 2 |

Table 30. Performance of corn silage - Piedmont - Area III. Two Year Average - 1968-1969. Average of 6 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dixie 82 | 16.8 | 65.7 | 5.9 | 8.2 | 4.3 | 26.5 | 61.1 | 50.5 | 58 | 117 | 98 | 8 |
| NC 270 | 16.6 | 69.8 | 5.8 | 9.0 | 5.0 | 25.2 | 62.0 | 51.8 | 54 | 114 | 100 | 6 |
| Pioneer 3009 | 16.6 | 68.0 | 5.8 | 8.8 | 4.8 | 25.3 | 62.0 | 51.7 | 50 | 113 | 99 | 4 |
| *NC 1057 | 15.8 | 71.5 | 5.6 | 8.5 | 4.6 | 26.4 | 61.2 | 50.7 | 50 | 108 | 98 | 2 |
| Coker 912 | 15.4 | 66.6 | 5.4 | 8.9 | 5.0 | 23.4 | 62.6 | 52.6 | 49 | 108 | 99 | 6 |
| *NC 8019 | 15.4 | 67.6 | 5.4 | 9.0 | 5.0 | 24.1 | 62.8 | 52.8 | 48 | 104 | 98 | 4 |
| Coker S48 | 15.3 | 65.2 | 5.4 | 8.5 | 4.6 | 24.5 | 62.5 | 52.4 | 44 | 108 | 100 | 3 |
| Coker 52 | 15.2 | 67.4 | 5.4 | 9.2 | 5.2 | 26.6 | 61.1 | 50.5 | 46 | 104 | 98 | 3 |
| Mean of Test | 15.2 | 67.6 | 5.3 | 8.6 | 4.6 | 25.2 | 62.0 | 51.8 | 50 | 110 | 98 | 4 |
| McNair 440V | 15.0 | 66.6 | 5.2 | 9.0 | 5.1 | 25.3 | 61.9 | 51.6 | 49 | 105 | 96 | 5 |
| Dixie 29 | 14.6 | 66.2 | 5.1 | 8.4 | 4.6 | 23.6 | 63.1 | 53.3 | 52 | 112 | 98 | 6 |
| Pioneer 3048 | 14.2 | 70.0 | 5.0 | 8.4 | 4.5 | 25.8 | 61.6 | 51.2 | 50 | 112 | 97 | 4 |
| *NC 6019 | 13.8 | 68.4 | 4.8 | 8.2 | 4.3 | 24.8 | 62.3 | 52.2 | 48 | 104 | 96 | 4 |

Table 31. Performance of corn silage - Southern Coastal Plain - Area IV. Two Year Average - 1968-1969. Average of 3 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SC 236 | 17.8 | 61.8 | 6.2 | 8.6 | 4.6 | 24.2 | 62.6 | 52.7 | 47 | 109 | 100 | 2 |
| Dixie 18 | 16.0 | 64.2 | 5.6 | 9.0 | 5.0 | 25.5 | 61.8 | 51.5 | 55 | 112 | 99 | 4 |
| NC 270 | 15.8 | 65.9 | 5.6 | 9.0 | 5.1 | 25.0 | 62.2 | 52.0 | 48 | 111 | 100 | 6 |
| McNair 440V | 15.8 | 62.6 | 5.6 | 9.0 | 5.1 | 26.2 | 61.3 | 50.8 | 44 | 96 | 100 | 4 |
| Mean of Test | 15.5 | 63.5 | 5.5 | 9.0 | 5.0 | 24.9 | 62.2 | 52.1 | 46 | 102 | 100 | 4 |
| *NC 1057 | 15.2 | 65.6 | 5.3 | 8.8 | 4.9 | 26.6 | 61.0 | 50.4 | 45 | 98 | 98 | 3 |
| Coker 52 | 14.4 | 61.2 | 5.0 | 10.1 | 6.1 | 23.3 | 63.4 | 53.6 | 38 | 93 | 100 | 3 |
| Coker 911 | 14.4 | 65.1 | 5.0 | 9.9 | 5.9 | 23.4 | 63.2 | 53.4 | 45 | 100 | 100 | 4 |

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

Table 32. Performance of corn silage - Northern Mountains - Area I. Ashe County - 1969

| 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 % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *NC 8014 | 19.2 | 78.4 | 6.7 | 8.0 | 4.2 | 26.6 | 61.1 | 50.5 | 58 | 121 | 100 |
| Pioneer 3199 | 17.5 | 79.1 | 6.1 | 7.8 | 4.0 | 22.5 | 63.9 | 54.4 | 58 | 119 | 100 |
| Mean of Test | 17.3 | 77.7 | 6.0 | 8.0 | 4.1 | 23.2 | 63.4 | 53.7 | 56 | 120 | 100 |
| V.P.I. 648 | 16.7 | 75.9 | 5.8 | 7.7 | 3.8 | 20.7 | 65.1 | 56.1 | 57 | 124 | 100 |
| Pioneer 3306 | 15.7 | 77.6 | 5.5 | 8.6 | 4.7 | 23.2 | 63.4 | 53.7 | 49 | 114 | 100 |
| L.S.D. (.05) | 3.5 | 3.6 | 1.2 | N.S. | N.S. | N.S. | N.S. | N.S. | 5 | 8 | N.S. |
| (.01) | 5.1 | 5.2 | 1.8 | N.S. | N.S. | N.S. | N.S. | N.S. | 7 | 11 | N.S. |
| C.V. ( % ) | 12.7 | 2.9 | 12.7 | | | | | | 6 | 4 | |

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

Table 33. Performance of corn silage - Southern Mountains - Area II. Haywood County - 1969

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *NC 8014 | 19.8 | 79.7 | 6.9 | 7.7 | 3.8 | 25.8 | 61.6 | 51.2 | 64 | 128 | 81 | 0 |
| Silokorn A(McCurdy) | 19.8 | 77.9 | 6.9 | 7.2 | 3.4 | 29.8 | 58.9 | 47.4 | 84 | 152 | 77 | 3 |
| N.C. 270 | 19.7 | 79.4 | 6.9 | 8.0 | 4.1 | 26.5 | 61.1 | 50.5 | 66 | 134 | 77 | 6 |
| Silokorn (McCurdy) | 19.6 | 81.0 | 6.9 | 8.4 | 4.5 | 28.9 | 59.5 | 48.3 | 74 | 140 | 95 | 2 |
| *NC 1057 | 19.4 | 78.1 | 6.8 | 7.7 | 3.8 | 28.4 | 59.8 | 48.7 | 65 | 132 | 70 | 1 |
| Pioneer 3048 | 19.4 | 80.4 | 6.8 | 7.9 | 4.0 | 27.7 | 60.3 | 49.4 | 72 | 138 | 87 | 7 |
| Mean of Test | 18.8 | 79.1 | 6.6 | 7.9 | 4.0 | 26.4 | 61.2 | 50.6 | 66 | 134 | 81 | 3 |
| V.P.I. 648 | 16.9 | 76.6 | 5.9 | 7.7 | 3.8 | 22.2 | 64.1 | 54.7 | 51 | 120 | 85 | 3 |
| Pioneer 3191 | 16.0 | 79.7 | 5.6 | 8.4 | 4.5 | 22.0 | 64.2 | 54.9 | 55 | 130 | 78 | 5 |
| L.S.D. (.05) | 6.1 | 3.4 | 2.1 | N.S. | N.S. | N.S. | N.S. | N.S. | 8 | 13 | 29 | 8 |
| (.01) | 8.3 | 4.6 | 2.9 | N.S. | N.S. | N.S. | N.S. | N.S. | 11 | 17 | 39 | 11 |
| C.V. ( % ) | 22.1 | 2.9 | 22.1 | | | | | | 8 | 6 | 24 | 175 |

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

Table 34. Performance of corn silage - Piedmont - Area III. Burke, Davie and Chatham Counties - 1969.

| 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 | 16.6 | 72.7 | 5.8 | 9.0 | 5.0 | 24.2 | 62.7 | 52.8 | 55 | 120 | 100 | 6 |
| Pioneer 3009 | 15.9 | 73.9 | 5.6 | 8.6 | 4.6 | 25.9 | 61.6 | 51.1 | 53 | 117 | 100 | 4 |
| S.C. 236 | 15.7 | 72.7 | 5.5 | 7.8 | 4.0 | 29.3 | 59.2 | 47.8 | 56 | 120 | 98 | 4 |
| Coker 912 (w) | 14.9 | 72.2 | 5.2 | 8.8 | 4.9 | 24.9 | 62.2 | 52.1 | 50 | 110 | 100 | 6 |
| Coker 52 | 14.7 | 73.0 | 5.2 | 9.3 | 5.4 | 24.8 | 62.3 | 52.2 | 46 | 103 | 100 | 3 |
| Coker S48 | 14.6 | 71.4 | 5.1 | 9.0 | 5.0 | 23.9 | 62.9 | 53.0 | 43 | 111 | 100 | 3 |
| *NC 1057 | 14.6 | 75.7 | 5.1 | 8.4 | 4.5 | 25.8 | 61.6 | 51.2 | 52 | 114 | 97 | 2 |
| *NC 8019 | 14.5 | 73.6 | 5.1 | 9.4 | 5.5 | 24.4 | 62.6 | 52.6 | 49 | 107 | 100 | 5 |
| McNair 440V | 14.4 | 72.4 | 5.0 | 9.4 | 5.4 | 26.2 | 61.3 | 50.8 | 50 | 109 | 100 | 4 |
| Mean of Test | 14.4 | 73.8 | 5.0 | 8.7 | 4.7 | 25.5 | 61.8 | 51.5 | 51 | 113 | 100 | 5 |
| McNair 6801 | 14.2 | 76.5 | 5.0 | 8.8 | 4.8 | 26.6 | 61.0 | 50.4 | 54 | 115 | 100 | 4 |
| Wagwood 80-S | 14.1 | 74.4 | 4.9 | 8.3 | 4.4 | 25.5 | 61.8 | 51.5 | 58 | 118 | 100 | 7 |
| Pioneer 3048 | 13.6 | 77.7 | 4.8 | 8.3 | 4.4 | 27.1 | 60.7 | 50.0 | 53 | 117 | 100 | 4 |
| Dixie 82 | 13.6 | 75.5 | 4.8 | 8.5 | 4.6 | 27.1 | 60.7 | 49.9 | 59 | 119 | 100 | 10 |
| *NC 6019 | 13.4 | 74.3 | 4.7 | 8.0 | 4.2 | 24.8 | 62.3 | 52.2 | 47 | 108 | 100 | 4 |
| Dixie 29 | 13.3 | 72.9 | 4.6 | 8.0 | 4.2 | 23.9 | 62.9 | 53.0 | 52 | 114 | 98 | 6 |
| Watson 199 | 11.7 | 72.9 | 4.1 | 8.7 | 4.8 | 23.9 | 62.9 | 53.0 | 44 | 107 | 100 | 5 |
| L.S.D. (.05) | 2.9 | 3.6 | 1.0 | 1.4 | 1.3 | 3.6 | 2.5 | 3.5 | 3 | 7 | N.S. | N.S. |
| (.01) | 3.9 | 4.8 | 1.4 | 1.9 | 1.8 | 4.8 | 3.3 | 4.6 | 4 | 10 | N.S. | N.S. |
| C.V. ( % ) | 20.3 | 6.4 | 20.3 | 9.8 | 16.6 | 8.4 | 2.4 | 4.0 | 8 | 6 | | |

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

Table 35. Performance of corn silage - Southern Coastal Plain - Area IV. Edgecombe and Sampson Counties - 1969

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Ear Height Inches | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.C. 236 | 17.7 | 62.5 | 6.2 | 8.5 | 4.5 | 23.6 | 63.1 | 53.3 | 42 | 109 | 100 | 2 |
| *NC 8014 | 15.8 | 62.0 | 5.5 | 8.9 | 4.9 | 25.1 | 62.1 | 51.9 | 41 | 104 | 100 | 2 |
| Silokorn (McCurdy) | 15.2 | 66.6 | 5.3 | 8.8 | 4.9 | 22.4 | 64.0 | 54.5 | 46 | 106 | 96 | 4 |
| N.C. 270 | 15.1 | 66.0 | 5.3 | 9.4 | 5.4 | 24.8 | 62.3 | 52.1 | 47 | 112 | 99 | 7 |
| McNair 6801 | 14.6 | 65.6 | 5.1 | 8.6 | 4.7 | 27.5 | 60.4 | 49.6 | 44 | 106 | 100 | 4 |
| Mean of Test | 14.5 | 63.5 | 5.1 | 9.3 | 5.3 | 24.8 | 62.3 | 52.2 | 41 | 103 | 99 | 4 |
| Coker 52 | 14.4 | 58.9 | 5.0 | 10.6 | 6.5 | 25.2 | 62.0 | 51.8 | 32 | 94 | 100 | 3 |
| Dixie 18 | 14.3 | 65.6 | 5.0 | 9.5 | 5.5 | 23.9 | 62.9 | 53.0 | 53 | 115 | 98 | 5 |
| McNair 440V | 14.0 | 64.4 | 5.0 | 9.4 | 5.4 | 26.7 | 61.0 | 50.4 | 40 | 100 | 100 | 4 |
| Coker S48 | 13.8 | 58.8 | 4.8 | 9.6 | 5.6 | 28.5 | 59.7 | 48.6 | 33 | 97 | 99 | 5 |
| Coker 911 (w) | 13.4 | 64.9 | 4.7 | 9.8 | 5.8 | 21.9 | 64.3 | 54.9 | 40 | 101 | 100 | 6 |
| *NC 1057 | 12.8 | 66.4 | 4.5 | 8.6 | 4.7 | 26.3 | 61.2 | 50.7 | 42 | 102 | 95 | 4 |
| Watson 199 | 12.5 | 60.4 | 4.4 | 10.0 | 6.0 | 21.5 | 64.6 | 55.4 | 32 | 92 | 99 | 0 |
| L.S.D. (.05) | 2.7 | 5.7 | 1.0 | 1.1 | 1.0 | 5.3 | 3.6 | 5.0 | 4 | 5 | N.S. | N.S. |
| (.01) | 3.8 | 8.1 | 1.3 | 1.5 | 1.4 | 7.4 | 5.1 | 7.1 | 6 | 7 | N.S. | N.S. |
| C.V. ( % ) | 14.0 | 6.3 | 14.0 | 5.1 | 8.3 | 9.6 | 2.6 | 4.3 | 9 | 5 | | |

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

Table 36. Performance of sorghum silage - Piedmont - Area III. Three-year average. 1967-1968-1969. Average of 8 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Days to Mid-Bloom | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pioneer 931 | 25.4 | 67.9 | 8.9 | 7.0 | 3.2 | 32.7 | 56.7 | 44.6 | 87 | 110 | 98 | 1 |
| Sart | 19.9 | 71.8 | 6.9 | 6.0 | 2.3 | 24.5 | 62.5 | 52.4 | 90 | 99 | 90 | 0 |
| DeKalb FS-26 | 19.5 | 73.1 | 6.8 | 7.3 | 3.4 | 24.7 | 62.3 | 52.3 | 87 | 93 | 98 | 3 |
| Mean of Test | 17.6 | 70.5 | 6.2 | 7.6 | 3.7 | 26.2 | 61.3 | 50.8 | 83 | 86 | 96 | 1 |
| Leafmaster 43 | 15.1 | 70.6 | 5.3 | 8.5 | 4.6 | 26.8 | 60.9 | 50.2 | 85 | 76 | 98 | 0 |

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

Table 37. Performance of sorghum silage - Piedmont - Area III. Two-year average. 1968-1969. Average of 5 locations.

| Entries | Green Wt. Tons/A[1/] | Moisture % | Dry Matter Tons/A | Crude Protein % | Digestible Protein % | Crude Fiber % | TDN % | ENE % | Days to Mid-Bloom | Stalk Height Inches | Stand % | Lodging % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pioneer 931 | 27.2 | 65.0 | 9.6 | 6.4 | 2.6 | 33.2 | 56.6 | 44.2 | 80 | 102 | 100 | 2 |
| Sart | 23.3 | 68.6 | 8.2 | 5.2 | 1.6 | 24.8 | 62.3 | 52.2 | 86 | 92 | 99 | 0 |
| DeKalb FS-26 | 22.0 | 70.2 | 7.7 | 6.3 | 2.5 | 25.0 | 62.1 | 52.0 | 81 | 88 | 100 | 4 |
| Mean of Test | 19.4 | 67.4 | 6.8 | 6.8 | 3.0 | 26.7 | 61.0 | 50.4 | 80 | 82 | 98 | 1 |
| Leafmaster 43 | 16.8 | 66.0 | 5.9 | 7.6 | 3.8 | 27.4 | 60.5 | 49.8 | 80 | 76 | 98 | 0 |

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

Table 38. Performance of sorghum silage - Piedmont - Area III. Iredell and Alamance Counties - 1969.

| 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 | 31.2 | 64.9 | 10.9 | 6.1 | 2.4 | 32.5 | 57.0 | 44.8 | 73 | 103 | 100 |
| Sart | 28.8 | 66.5 | 10.1 | 4.9 | 1.2 | 25.4 | 61.9 | 51.6 | 81 | 92 | 100 |
| DeKalb FS-26 | 25.1 | 69.2 | 8.8 | 6.2 | 2.4 | 25.0 | 62.1 | 52.0 | 76 | 88 | 100 |
| Mean of Test | 22.5 | 67.5 | 7.9 | 6.5 | 2.8 | 27.9 | 60.1 | 49.2 | 75 | 85 | 97 |
| Leafmaster 43 | 17.2 | 65.8 | 6.0 | 7.4 | 3.5 | 26.8 | 60.9 | 50.3 | 75 | 80 | 95 |
| DeKalb FS-24 | 16.5 | 68.0 | 5.8 | 7.0 | 3.2 | 29.4 | 59.1 | 47.7 | 73 | 86 | 92 |
| *Pioneer XF639 | 16.0 | 70.8 | 5.6 | 7.7 | 3.8 | 28.4 | 59.8 | 48.7 | 71 | 63 | 96 |
| L.S.D. (.05) | 7.8 | 2.8 | 2.7 | 1.2 | 1.1 | 4.6 | 3.2 | 4.4 | 13 | 6 | 4 |
| (.01) | 12.2 | 4.5 | 4.3 | 1.9 | 1.7 | 7.2 | 5.0 | 6.9 | 20 | 9 | 6 |
| C.V. ( % ) | 21.2 | 8.6 | 21.2 | 7.1 | 15.6 | 6.4 | 2.0 | 3.5 | 7 | 7 | 6 |

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

## SOYBEAN VARIETIES

The soybean is an important cash crop in North Carolina and is planted throughout the Coastal and Piedmont Areas. This is reflected by the increase in acreage planted the last few years. Since 1953, the acreage has increased from 258,000 acres harvested to over one million acres harvested in 1968. In 1962, around 91% of the soybeans produced in the United States went into edible use and 9% into industrial uses. This type of use would indicate continued demands for soybeans.

With the improvement in cultural practices and varieties, yields are at a high level. In 1953 the state average yield was 16 bushels per acre compared to an estimated 25 bushels per acre for 1969. The relatively high prices received by growers make it profitable for farmers to produce soybeans.

Soybean production in North Carolina is estimated at 23,325,000 bushels. A crop of this size is 45 percent above the 1968 drought-stricken crop of 16,038,000 bushels. The estimated yield per acre of 25 bushels ties the record yield set in 1965 and 1966.

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 Seed Company, Hartsville, S. C.

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

McNair Seed Company, Laurinburg, North Carolina

L. B. Wannamaker Seed Company, St. Matthews, S. C.

### Test Locations

Five tests were conducted in 1969 with three in the Coastal Plain Area and two in the Piedmont Area, as shown in Figure 1. All were located on private farms except in the Washington County Test, which was conducted on an experiment station.

The good growing conditions of August and September resulted in good yields at all locations. The highest yields were at Sampson and Stanly Counties.

## Seasonal Conditions

The growing season was generally favorable for the production of good yields of soybeans in the Coastal Plain and Piedmont Areas of North Carolina for 1969. All tests were planted in a good seed bed. Showers during September were beneficial to the soybean crop and frosts and open weather in October enabled the tests to be harvested on time with a minimum of loss from shattering. Farmers had harvested one-third of their crop by November 7.

At all locations good stands were obtained and good growing conditions existed during the early part of the growing season resulting in above average yields.

Soybean production in North Carolina in 1969 was 40 percent above the low crop of 1968. The state per acre yield in 1968 was only 16.5 bushels per acre compared with 25 bushels per acre in 1969.

## 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 39. Planting, harvesting and yield measurements were directly supervised by personnel of the North Carolina Agricultural Experiment Station. Treflan was used as a herbicide at all locations.

Table 39. Cultural practices for soybean performance trials.

| Area and Co-operator | Fertilizer lbs/A | Row Spacing Inches | Date of Planting | Date of Harvest |
|---|---|---|---|---|
| Coastal Plain | | | | |
| Washington County<br>J. W. Smith | 350<br>0-25-25<br>100<br>0-25-25 | 38" | May 5 | October 23 (early)<br>November 19 (late) |
| Wayne County<br>George W. Aycock, Jr. | 200<br>2-6-12<br>100<br>0-25-25 | 38" | May 7 | Discarded (early)<br>November 10 (late) |
| Sampson County<br>Garnett & Howard Boney | 300<br>3-9-18 | 38" | May 7 | October 15 (early)<br>November 11 (late) |
| Piedmont | | | | |
| Stanly County<br>D. G. Harwood | 500<br>5-10-10<br>100<br>0-25-25 | 38" | May 6 | October 29 (early)<br>October 29 (late) |
| Chatham County<br>Russell & Eugene Johnston | 600<br>0-25-25 | 38" | May 6 | October 30 (early)<br>October 30 (late) |

## Criteria for Evaluating Soybean Varieties

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

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

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

Lodging. Lodging was rated according to the following scale:

1. All erect
2. 5-25% down
3. 26-50% down
4. 51-75% down
5. 76-100% 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 40 and 41. Varietal performance varied between locations, depending upon the seasonal conditions. Table 42 and 43 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 42 and 43. The approximate date of maturity for these groups has been presented earlier. Information on lodging, plant height and moisture are shown in Tables 44 and 45.

Three new varieties, Davis, Coker 208 and McNair 800, had yields in excess of 40 bushels per acre when averaged over five locations.

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 40. Performance of Soybeans. Two year average - 1968-1969. Average of 9 locations.

| Entries | Yield Bu/A | Lodging | Plant Height Inches | % Moisture |
|---|---|---|---|---|
| | | EARLY MATURING ENTRIES | | |
| Dare | 37.8 | 1.3 | 33 | 13.54 |
| Mean of Test | 37.4 | 1.2 | 32 | 13.76 |
| York | 37.3 | 1.1 | 31 | 14.54 |
| | | LATE MATURING ENTRIES | | |
| N64-2430 | 41.0 | 1.2 | 36 | 15.26 |
| Coker Hampton 266 | 40.8 | 1.9 | 40 | 17.20 |
| Davis | 39.4 | 1.8 | 38 | 15.22 |
| Coker 208 | 38.2 | 1.3 | 34 | 16.96 |
| Mean of Test | 36.8 | 1.5 | 36 | 15.38 |
| Bragg | 36.4 | 1.7 | 40 | 15.14 |
| Lee | 36.2 | 1.3 | 32 | 15.08 |
| McNair 800 | 36.1 | 2.0 | 36 | 15.25 |
| Lee 68 | 34.4 | 1.4 | 32 | 15.14 |
| Pickett | 33.4 | 1.2 | 31 | 14.56 |

Table 41. Performance of soybeans. Three year average 1967-1968-1969. Average of 13 locations.

| Entries | Yield Bu/A | Lodging | Plant Height Inches | % Moisture |
|---|---|---|---|---|
| | | EARLY MATURING ENTRIES | | |
| Dare | 39.8 | 1.2 | 33 | 14.07 |
| York | 39.8 | 1.4 | 32 | 13.97 |
| Mean of Test | 39.2 | 1.1 | 33 | 14.23 |
| | | LATE MATURING ENTRIES | | |
| N64-2430 | 43.2 | 1.5 | 38 | 14.44 |
| Coker Hampton 266 | 42.3 | 1.9 | 40 | 15.80 |
| Mean of Test | 39.1 | 1.7 | 36 | 14.55 |
| Lee | 37.7 | 1.5 | 32 | 14.41 |
| Bragg | 37.3 | 1.8 | 41 | 14.33 |
| Pickett | 35.6 | 1.5 | 32 | 14.00 |

EARLY MATURING ENTRIES

Table 42. Performance of Soybeans by locations and combined (Bu/A) 1969.

| Entries | Wash-ington | Sampson | Chatham | Stanly | Wayne | Average | Maturity Group |
|---|---|---|---|---|---|---|---|
| | | | Commercial Varieties | | | | |
| York | 27.4 | 46.8 | 45.8 | 54.3 | | 43.6 | V |
| Dare | 26.5 | 43.4 | 44.1 | 48.5 | | 40.6 | V |
| | | | Experimentals | | | | |
| N63-2769 | 31.0 | 37.8 | 34.0 | 50.7 | | 38.4 | V |
| N67-3831 | 25.0 | 39.3 | 38.1 | 49.8 | Discarded | 38.0 | V |
| N67-4005 | 25.6 | 42.3 | 34.8 | 55.0 | | 39.4 | V |
| Mean of Test | 27.1 | 41.9 | 39.4 | 51.7 | | 40.0 | |
| L.S.D. (.05) | N.S. | 4.1 | N.S. | N.S. | | 5.3 | |
| (.01) | N.S. | 5.8 | N.S. | N.S. | | N.S. | |
| C.V. ( % ) | 15.8 | 6.4 | 18.3 | 8.8 | | 12.4 | |

LATE MATURING ENTRIES

Table 43. Performance of Soybeans by locations and combined (Bu/A) 1969.

| Entries | Wash-ington | Sampson | Chatham | Stanly | Wayne | Average | Maturity Group |
|---|---|---|---|---|---|---|---|
| | | | Commercial Varieties | | | | |
| McNair 800 | 30.6 | 51.8 | 25.9 | 54.4 | 37.9 | 40.1 | VII |
| McNair 600 | 34.6 | 56.1 | 35.5 | 41.0 | 40.1 | 41.5 | VI |
| LBW 13-1-12 | 38.5 | 51.0 | 36.1 | 44.2 | 29.5 | 39.8 | VII |
| Bragg | 32.2 | 54.7 | 32.7 | 46.5 | 37.5 | 40.7 | VII |
| Lee | 37.2 | 50.2 | 35.8 | 48.0 | 28.1 | 39.9 | VI |
| Davis | 42.4 | 55.7 | 36.8 | 54.5 | 37.8 | 45.5 | VI |
| Pickett | 32.8 | 41.8 | 38.0 | 42.9 | 28.0 | 36.7 | VI |
| Lee 68 | 36.5 | 49.0 | 36.3 | 43.5 | 33.3 | 39.7 | VI |
| Coker Hampton 266 | 37.6 | 56.6 | 43.0 | 61.4 | 37.9 | 47.3 | VIII |
| Coker 208 | 37.9 | 50.2 | 32.1 | 56.8 | 36.0 | 42.6 | VIII |
| | | | Experimentals | | | | |
| Blend 1 | 40.7 | 57.0 | 46.3 | 56.7 | 39.6 | 48.0 | |
| Blend 2 | 39.8 | 55.8 | 38.8 | 49.1 | 39.8 | 44.6 | |
| N66-1783 | 33.9 | 44.9 | 30.6 | 40.6 | 25.5 | 35.1 | VI |
| N66-1221 | 32.6 | 44.8 | 29.4 | 45.1 | 27.0 | 35.8 | VI |
| N66-1231 | 34.7 | 45.9 | 31.6 | 45.7 | 24.9 | 36.6 | VI |
| N66-5236 | 34.4 | 52.2 | 39.7 | 49.7 | 30.9 | 41.4 | VI |
| F66-242 | 29.6 | 53.1 | 34.6 | 48.2 | 40.4 | 41.2 | VII |
| F64-1683 | 33.0 | 57.2 | 23.1 | 57.0 | 37.6 | 41.6 | VII |
| N64-2430 | 43.4 | 55.0 | 37.7 | 55.5 | 41.8 | 46.7 | VII |
| N66-5479 | 32.4 | 48.4 | 36.2 | 43.9 | 37.5 | 39.7 | VI |
| Mean of Test | 35.7 | 51.6 | 35.0 | 49.2 | 34.5 | 41.2 | |
| L.S.D. (.05) | 4.8 | 5.3 | 7.9 | 7.8 | 5.8 | 5.0 | |
| (.01) | 6.3 | 7.0 | 10.4 | 10.2 | 7.6 | 6.6 | |
| C.V. ( % ) | 9.8 | 7.5 | 16.3 | 11.4 | 12.0 | 11.3 | |

EARLY MATURING ENTRIES

Table 44. Lodging, plant height and moisture of soybean varieties combined for Washington, Sampson, Chatham, Stanly and Wayne Counties - 1969

| Entries | Lodging | Plant Height (inches) | Moisture % |
|---|---|---|---|
| | | Commercial Varieties | |
| York | 1.2 | 32 | 12.97 |
| Dare | 1.6 | 33 | 12.92 |
| | | Experimentals | |
| N63-2769 | 1.4 | 32 | 13.20 |
| N67-3831 | 1.4 | 35 | 12.97 |
| N67-4005 | 1.4 | 33 | 13.12 |
| Mean of Test | 1.4 | 33 | 13.04 |
| L.S.D. (.05) | .3 | N.S. | N.S. |
| (.01) | N.S. | N.S. | N.S. |
| C.V. ( % ) | 32.5 | 7 | 8.3 |

LATE MATURING ENTRIES

Table 45. Lodging, plant height and moisture of soybean varieties combined for Washington, Sampson, Chatham, Stanly and Wayne Counties - 1969.

| Entries | Lodging | Plant Height (inches) | Moisture % |
|---|---|---|---|
| | | Commercial Varieties | |
| McNair 800 | 3.0 | 37 | 14.99 |
| McNair 600 | 2.7 | 37 | 14.73 |
| LBW 13-1-12 | 1.5 | 32 | 14.32 |
| Bragg | 2.4 | 42 | 15.10 |
| Lee | 1.6 | 32 | 14.80 |
| Davis | 2.7 | 39 | 15.01 |
| Pickett | 1.5 | 30 | 13.92 |
| Lee 68 | 1.8 | 32 | 14.90 |
| Coker Hampton 266 | 2.8 | 42 | 18.14 |
| Coker 208 | 1.6 | 34 | 17.22 |
| | | Experimentals | |
| Blend 1 | 1.9 | 38 | 14.64 |
| Blend 2 | 2.6 | 40 | 14.45 |
| N66-1783 | 2.0 | 40 | 14.16 |
| N66-1221 | 1.6 | 42 | 14.28 |
| N66-1231 | 1.2 | 34 | 14.18 |
| N66-5236 | 1.2 | 31 | 14.41 |
| F66-242 | 2.6 | 42 | 16.19 |
| F64-1683 | 2.3 | 41 | 18.54 |
| N64-2430 | 1.4 | 37 | 14.91 |
| N66-5479 | 1.0 | 32 | 13.79 |
| Mean of Test | 2.0 | 37 | 15.14 |
| L.S.D. (.05) | .8 | 3 | 2.5 |
| (.01) | 1.0 | 4 | 3.3 |
| C.V. ( % ) | 30.7 | 9 | 11.1 |

# 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 a smooth leaf 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 1969 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

McNair Seed Company, Laurinburg, North Carolina

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

## Seasonal Conditions

Cotton production in North Carolina in 1969 was estimated at 100,000 ıles which was 13,000 bales or 19% below the 1968 crop. Good growth :sulted from good stands and the crop had excellent prospects. Frequent .ins late in the season caused a build-up in weevil and boll worm festations and continuation of showers into September delayed maturity d harvest.

Lint yield per harvested acre was 281 pounds compared with a yield 310 pounds of lint per acre for 1968. For 1969 an estimated 183,000 res were planted and 171,000 acres were harvested. This compares with 0,000 acres planted and 189,000 acres harvested in 1968.

## Test Locations

Four locations were planted in 1969 with two in the Coastal Plain ea and two in the Piedmont as shown in Figure 1. All of the tests were ated on private farms.

## Cultural Practices

Cultural practices, such as seed bed preparation, date of planting, :tilization, cultivation and insect control measures were in accord with )d farming practices. These are listed for each test in Table 46. ınting, harvesting and yield measurements were directly supervised by ·sonnel of the North Carolina Agricultural Experiment Station.

## Criteria for Evaluating Cotton Varieties

A randomized block design with four replications was used at each ation. Plot size at all locations was four rows 25 feet long.

Table 46. Cultural practices for cotton performance trials.

| Area and Co-operator | Fertilizer lbs/A and Grade | Herbicide preemerge | Row Spacing Inches | Date of Planting | Date of Harvest |
|---|---|---|---|---|---|
| Rutherford County Van McDaniels | 600 2-12-12 Broadcast 80 (topdressed) Nitrogen Solution | Cotoran | 38" | April 23 | October 21 |
| Anson County Calvin Phillips | 100 10-20-20 In Row | Treflan | 38" | April 11 | October 2 |
| Edgecombe County Melvin Smiley | 800 5-10-10 Broadcast 100 0-25-25 In Row | Treflan | 38" | May 5 | October 2 |
| Robeson County Varsar Bullard | 600 3-9-18 Broadcast 100 10-20-20 In Row | Treflan | 38" | April 2 | Discarded |

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

3.0 - 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

Row spacing was the same at each location as shown in Table 45. Each plot had two border rows.

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 when harvested. The weight of lint ginned from this sample of seed cotton was expressed as a percentage of the weight of seed cotton.

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

Bolls per Pound of Seed Cotton: The number of bolls required to make one pound of seed cotton was determined by weighing the 25 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 propulation 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.

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

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

The operations and measurements required for the development of data on yield and such other agronomic characters as boll size and lint percentage were performed by personnel at the experiment station. Fiber samples from all replications at all locations were sent to the North Carolina Department of Agriculture, Market Division, Engineering Section for analyses.[2/]

## RESULTS

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

The data presented in Tables 47 and 48 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 47.

Individual location data are presented in Table 49. 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

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

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. Emphasis is being placed upon those varieties with high tensile strength to supply the need of mills using rapid spinning equipment.

Table 47. Performance of cotton varieties. Three Year Average - 1967-1968-1969. Average of 8 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 | Fib. Wt./in. micrograms | Strength "Pressley" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| McNair 1032-B | 759 | 2114 | 35.8 | 1 3/32 | 85 | .41 | .51 | 1.06 | 48 | 4.5 | 84.3 |
| Coker 201 | 738 | 1967 | 37.6 | 1 1/8 | 77 | .43 | .53 | 1.11 | 48 | 4.5 | 83.0 |
| Mean of Test | 701 | 1974 | 35.7 | 1 5/32 | 78 | .43 | .54 | 1.13 | 48 | 4.3 | 86.7 |
| Coker 413-68 | 678 | 1893 | 35.9 | 1 5/32 | 81 | .44 | .55 | 1.16 | 48 | 4.1 | 88.1 |
| TH-149-20 | 673 | 1979 | 34.2 | 1 5/32 | 67 | .44 | .55 | 1.13 | 49 | 4.4 | 88.9 |

Table 48. Performance of cotton varieties. Two Year Average - 1968-1969. 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 | Fib. Wt./in. micrograms | Strength "Pressley" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coker 201 | 796 | 2154 | 36.9 | 1 1/8 | 80 | .44 | .54 | 1.12 | 48 | 4.4 | 83.9 |
| McNair 1032-B | 737 | 2087 | 35.2 | 1 1/16 | 88 | .42 | .51 | 1.06 | 48 | 4.4 | 86.2 |
| Mean of Test | 732 | 2099 | 35.0 | 1 1/8 | 80 | .44 | .54 | 1.13 | 48 | 4.2 | 87.9 |
| Coker 421-B | 726 | 2044 | 35.6 | 1 1/8 | 90 | .44 | .54 | 1.14 | 48 | 4.2 | 88.5 |
| McNair 6207 | 711 | 2086 | 34.3 | 1 1/8 | 82 | .43 | .52 | 1.12 | 47 | 4.0 | 84.3 |
| TH-149-20 | 710 | 2128 | 33.5 | 1 1/8 | 68 | .44 | .56 | 1.13 | 49 | 4.4 | 89.6 |
| Coker 413-68 | 706 | 2014 | 35.2 | 1 1/8 | 86 | .44 | .55 | 1.16 | 48 | 4.0 | 88.5 |

Table 49. Performance of cotton varieties. Average of Edgecombe, Anson and Rutherford Counties - 1969

| Variety or Line | Lint Lbs/A | Seed Cotton Lbs/A | Lint % | Staple length in. | Bolls/lb. of seed Cotton | Fiber Properties: Span Length 66.7% (expressed in in.) | Span Length 50% (expressed in in.) | Span Length 2.5% (expressed in in.) | Uniformity Ratio | Micronaire Fib. wt./in. micrograms | Tensile Strength "Pressley" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coker 201 | 909 | 2494 | 36.2 | 1 5/32 | 73 | .47 | .57 | 1.16 | 50 | 4.2 | 78.8 |
| Coker 310-9901 | 896 | 2593 | 35.1 | 1 7/32 | 73 | .50 | .60 | 1.26 | 48 | 4.1 | 81.6 |
| Coker 310 | 888 | 2537 | 35.2 | 1 7/32 | 74 | .48 | .59 | 1.24 | 48 | 4.2 | 83.8 |
| McNair 1032-B | 859 | 2474 | 34.3 | 1 3/32 | 80 | .44 | .54 | 1.10 | 50 | 4.5 | 82.2 |
| Mean of Test | 844 | 2474 | 34.1 | 1 3/16 | 73 | .48 | .58 | 1.19 | 49 | 4.2 | 82.7 |
| Coker 417 | 840 | 2454 | 34.3 | 1 3/16 | 71 | .50 | .60 | 1.22 | 49 | 4.1 | 83.5 |
| Coker 421B | 823 | 2328 | 35.6 | 1 3/16 | 82 | .46 | .57 | 1.18 | 48 | 4.3 | 84.8 |
| TH-149-20 | 818 | 2521 | 32.2 | 1 3/16 | 63 | .49 | .60 | 1.18 | 51 | 4.3 | 84.5 |
| McNair 6207 | 814 | 2486 | 32.6 | 1 3/16 | 74 | .47 | .57 | 1.18 | 48 | 3.8 | 79.9 |
| Coker 413-68 | 810 | 2358 | 34.4 | 1 3/16 | 76 | .48 | .58 | 1.20 | 49 | 4.1 | 83.9 |
| McNair 7215 | 782 | 2497 | 31.3 | 1 3/16 | 68 | .48 | .58 | 1.17 | 50 | 4.2 | 83.7 |
| L.S.D. (.05) | N.S. | N.S. | 2.3 | .7/32 | 18 | .02 | .02 | .02 | 1 | .2 | 3.4 |
| (.01) | N.S. | N.S. | 3.2 | 1.0/32 | 25 | .03 | .03 | .03 | 2 | .3 | 4.6 |
| C.V. ( % ) | 13 | 12 | 4.5 | 1.6 | 5 | 3.3 | 3.0 | 1.2 | 3 | 4 | 3.2 |