Research Report No. 9
November, 1963

Measured Crop Performance

TOBACCO

1963

GUY L. JONES, *Professor*
J. M. KENYON, *Research Assistant*
E. L. PRICE, *Tobacco Inspector*

Department of Crop Science
N. C. State of the
University of North Carolina
at Raleigh

TABLE OF CONTENTS

PERFORMANCE OF TOBACCO VARIETIES IN NORTH CAROLINA

Guy L. Jones, Joe M. Kenyon and Ernest L. Price[1/]

INTRODUCTION

The tobacco varieties available for planting in 1964 should be essentially the same as those available for the past season. Minimum Standards for the release of flue-cured tobacco varieties have been developed and with them an agreement was made with tobacco breeders not to release any new varieties prior to their being tested through this program for two years. This has been the first year of the program.

The breeder has long requested that he be provided with a set of standards to guide him in the development of tobacco varieties. During the past season, a committee composed of representatives from public agencies, tobacco growers, commercial tobacco breeders and tobacco companies, both export and domestic, developed a set of "Minimum Standards" that a variety should meet in order for it to receive acceptance by both the grower and the trade. This procedure adopts the principle of testing new varieties against standard varieties. Before being included in the Regional Test, a line should be genetically stable. New varieties should not

---

1/ Professor in Charge of Variety Testing, Research Assistant, and Tobacco Inspector, Department of Crop Science, respectively.

The authors wish to acknowledge the assistance of personnel on the Research Stations, including Wallace Dickens, Kimble Brock, Clyde McSwain, Thilbert Suggs, W. C. Allsbrook, Smith Lassiter, J. M. Carr, Alton Wood and Howell Gentry, for help in conducting these tests.

differ from the standards by more than plus or minus 15 percent for measurable chemical tests which are considered important to quality, and should not contain more than 8 percent of the total alkaloids as nornicotine. Variety candidates should also compare favorably with the standard varieties for color, body, texture, moisture equilibrium and filling value. New varieties should be acceptable in flavor and aroma as judged against the standard varieties. Basically, these are the minimum standards a variety must possess to receive acceptance in the trade. The program is a voluntary one and has received enthusiastic endorsement by all segments of the industry.

To determine if varieties meet the standards, they must be tested in regional small plot tests located throughout the flue-cured tobacco region of the United States. If judged satisfactory in these tests, they should be grown in "farmer" tests throughout the region in quantities that the companies can examine and growers can see how they perform. Such a program should mean much to our domestic and export trade and to our growers, because it assures the manufacturers that varieties that are made available to growers will have been thoroughly tested and evaluated. Through this program it is believed that quality will improve markedly as far as varieties are concerned.

The tobacco variety evaluation program in North Carolina is a part of the Regional Test. This program serves as a proving ground in variety development.

Data are presented from the 1963 Official Variety Test and the Cooperative Variety Evaluation Test. In addition, summary tables of variety performance over different years and locations are presented. Similar reports which record previous years' data have been issued. It should be recognized that a single year's data may not portray the true performance of a variety. Testing over a period of years and under farm conditions is needed to fully evaluate the performance of any variety. Information of this nature serves as a guide to tobacco breeders in the development of varieties and to growers in choosing a variety.

EXPERIMENTAL PROCEDURE

The Tobacco Variety Evaluation Program in North Carolina is divided into two phases. The first phase, the Official Variety Test, consists of testing varieties and breeding lines in small replicated plots located on five research stations. The second phase of the program involves a more extensive study of fewer varieties and advanced breeding lines grown under farm conditions in approximately one-half acre plots and is referred to as the Cooperative Variety Evaluation Test.

Official Variety Test

Disease resistant and non-resistant experimental lines and varieties developed by public and private agencies are included. One requirement for acceptance is quantitative data from experiments in which the proposed entry is compared with recognized

varieties. Entries of seeds of lots offered for sale within the state or from seed lots furnished by testing agencies from other states may also be included. Performance data are collected on yield, value, agronomic characteristics, disease resistance, chemical characteristics and physical quality traits. Tobacco company leaf and research personnel co-operate in the physical and chemical evaluation of this material.

Early in December of each year rules governing the test for the ensuing year are distributed to all previous participants and to those who make inquiry.

Agencies Sponsoring Entries in 1963

Bell's Seed Farm, Rocky Mount, N. C.

Bissette's Seed Farm, Wilson, N. C.

Coker's Pedigreed Seed Company, Hartsville, S. C.

McNair Seed Company, Inc., Laurinburg, N. C.

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

Reams Seed Company, Apex, N. C.

S. C. Agricultural Experiment Station and USDA, Florence, S. C.

Speight Seed Farms, Winterville, N. C.

Virginia Agricultural Experiment Station, Chatham, Va.

Test Locations

Five locations were used to represent the different soil and climatic conditions of the state. The experiment numbers and locations were as follows:

TV 138 Border Belt Tobacco Research Station, Wallace Dickens, Superintendent, Whiteville, N. C., representing the Border Belt.

TV 140 Upper Coastal Plain Research Station, Clyde McSwain, Superintendent, Rocky Mount, N. C., representing the Eastern Belt.

TV 139 Central Crops Research Station, W. C. Allsbrook, Superintendent, Clayton, N. C., representing the Eastern Belt.

TV 141 Oxford Tobacco Research Station, J. M. Carr, Superintendent, Oxford, N. C., representing the Middle Belt.

TV 142 Upper Piedmont Tobacco Research Station, Howell Gentry, Superintendent, Reidsville, N. C., representing the Old Belt.

The map in Figure 1 shows the locations of these stations and also the locations of the cooperative grower tests.

Methods

The Official Variety Tests were conducted on disease-free soil, insofar as possible. All entries were coded in the plant bed and in the field and were included at each location.

Three replications of a 7 x 7 triple lattice design were used at each location. The plants were banded approximately two weeks prior to transplanting and individually selected at transplanting for maximum uniformity within plots at all locations. Each two-row plot consisted of 40 competitive plants, except at the Clayton location which consisted of 32. The rows were 3.5 feet apart at all locations except Whiteville and Oxford, which were 3 feet 9 inches. The rows were 38.5 feet long, except Clayton which was 31 feet 2 inches, with the plants spaced 22 inches in the row.

Farm practices of plant bed preparation, liming, fertilization, planting date, cultivation, and insect and disease control were in accordance with those normally accepted as good for the production of tobacco. Fertilizer was applied in accordance with soil test recommendations. Cultural practices are shown in Table 17.

All entries were topped and hand suckered. Individual plots were harvested according to degree of maturity, tagged and kept separate throughout curing, sorting and grading. Data on agronomic characteristics were taken in the field, and chemical determinations were made on the cured leaf of the whole plant. Disease reactions were noted in separate tests under severe disease conditions.

The methods of recording data were the same as those used in previous years, except as noted, and may be found in Field Crops Research Report Number 23.

Value per Acre: After the tobacco was sorted into lots, a Federal Tobacco Inspector graded the tobacco from each plot into appropriate government grades. The value per acre was calculated by multiplying the pounds of each grade by the average auction price paid for that grade during the 1963 season through October 3, 1963.

Quality Index: Each grade was evaluated for physical traits by rating the leaf for color, body and texture on a scale of 1 to 5. The categories were: 1 = very good, 2 = good, 3 = fair, 4 = poor, and 5 = very poor. A quality index was then calculated for each plot.

This rating was made by experiment station personnel on all entries at all locations. In addition, 30 of the varieties and advanced breeding lines from one replication each at Whiteville, Rocky Mount and Oxford were rated by tobacco companies.

Chemical Analyses: A sample of the lamina portion of the cured leaf from the whole plant was taken on a proportional basis by weight of each grade of a plot. The sample from each plot was submitted for chemical analysis.[2/] The per cent of certain chemical constituents was determined on a dry weight basis. Nicotine and nornicotine were determined by the Cundiff-Markunas method. Reducing sugars were determined by a modification of the Hassid procedure . Nitrogenous constituents were determined according to methods published in the TRP series.

Disease Reactions:[3/] Reactions to black shank were noted in field tests at the Davis Farm in Lenoir County and the Upper Coastal Plain Experiment Station. Two replications of a randomized block design were used at each location. Each of these fields had a high incidence of black shank.

2/ Chemical analyses were made under the supervision of J. A. Weybrew and John L. Hall of the Department of Crop Science, and by the Liggett and Myers Tobacco Company and R. J. Reynolds Tobacco Company Their assistance is gratefully acknowledged.

3/ The Plant Pathology Department, including E. L. Moore, N. T. Powell and J. L. Apple, and G. R. Gwynn of the Department of Crop Science co-operated on the tests for disease reaction. Their assistance is gratefully acknowledged.

Even though the test plots at the Oxford Station were heavily infested with Granville Wilt, each transplant was inoculated with a bacterial suspension of approximately five billion viable bacterial cells in the transplant water.

Fusarium Wilt tests were made in the greenhouse by inoculating transplant size plants with a mixture of five viable cultures of Fusarium. Replicated tests were used.

Root Knot reaction was determined in replicated field tests in Durham County which had a high level of Meloidogyne incognita, (most prevalent species of Root Knot nematode occurring on flue-cured tobacco).

Stand Corrections: Counts were made of healthy plants after the stand was established and just prior to first harvest. Stand was corrected according to a method proposed by Crews and Jones, Tobacco Science 6, pp. 114-118, 1962.

Standard Check Varieties: The checks or standards, Hicks Broadleaf and NC 95 were included for comparison. These are the same varieties used by other stations as recommended by the Regional Tobacco Variety Evaluation Committee of the Tobacco Workers' Conference.

Seasonal Conditions: In general, all tobacco in the Official Variety Test was planted under favorable moisture conditions. However, as the growing season progressed, drought conditions developed at several of the stations. The growing season was generally cool and was conducive to the development of fairly high nicotine tobacco with medium to heavy body. Rainfall data are shown in Table 18.

The Whiteville test, TV 138, was transplanted under fair moisture conditions, however, the weather was cool. There was fairly adequate, but not excessive, rain throughout the season. The tobacco did not attain the size it usually does at this location probably due to low rainfall and cool temperatures. The tobacco in this test tended to be fair to good in color and had medium body and fair texture. Brown Spot caused heavy damage in the more susceptible entries. The tobacco in this test was of reasonably good quality and was best of the five locations.

The Rocky Mount test, TV 140, was transplanted under adequate moisture conditions. There was a deficiency of rainfall during the remainder of most of the season. In fact, this test was grown under extreme drought conditions from June 1 to July 28. The tobacco made fair growth even with the dry, cool season. However, this had a major effect on quality. The lower stalk tobacco showed fair color and texture. After the rains, the upper stalk tobacco showed signs of immaturity. The tobacco at this location was dark and heavy bodied. The growing season was poorest at this location.

The Clayton test, TV 139, was transplanted under fair moisture conditions. This was followed by a dry, cool season. There was a deficiency of water throughout the season. The quality of the tobacco was only fair. Some plots had good color and texture, whereas others were very poor. The tobacco was small in size and showed immaturity in the top.

The Oxford test, TV 141, was transplanted under good conditions and grew off uniformly. A drought period followed and the tobacco suffered severely. An irrigation helped to get normal growth. Due the environmental conditions, considerable leaf drop was noted on certain entries. The cured leaf was medium to heavy in body and had a very dull, grey appearance.

The Reidsville test, TV 142, was transplanted under favorable moisture conditions. This location was in the dry Piedmont area. Irrigation helped to make the tobacco fairly normal in size. The soil was a heavy type and was very fertile. The tobacco took up a high level of nitrogen and was high in nicotine and heavy in body. There was some immaturity in the top. The tobacco that did not show excess nitrogen was fairly good quality. Some entries were better under these conditions than others.

The data from all 49 entries were statistically treated.[4/] Using a 7 x 7 triple lattice design, adjusted treatment means in individual analysis were used where the efficiency relative to randomized block design was above 100.

Cooperative Variety Evaluation Tests

The number of entries in this test is necessarily limited since the plots are rather large and there are many locations. In this program are included advanced breeding lines from the Experiment

---

4/ Statistical analyses were made in the Statistical Laboratory under the supervision of John O. Rawlings, F. J. Verlinden and R. D. Weems Their assistance is gratefully acknowledged.

Station as well as certain varieties that may be planted on a wide scale. It is desirable to gain information on these breeding lines and varieties under farm conditions. Also, this provides an opportunity for the tobacco companies to study the breeding lines and new varieties for their manufacturing characteristics.

This part of the evaluation program is a co-operative effort between the experiment station, extension service, USDA, tobacco companies and growers. The participating companies were: The American Tobacco Company, Brown and Williamson Tobacco Corporation, Imperial Tobacco Company, Liggett and Myers Tobacco Company, Philip Morris, Inc., P. Lorillard Company and R. J. Reynolds Tobacco Company.

Twelve locations were utilized -- three in each of the Border, Eastern, Middle and Old Belts. Six of the locations were planted to breeding lines and a check and six locations were planted to newly released varieties and a check.

Fertilization and other cultural practices, as shown in Table 16, were those generally used by the growers and were considered moderate. A nematode assay was made on all fields and those with a nematode problem were fumigated.

Representatives from both domestic and foreign buyers visited these plots in the field. The cured tobacco was displayed on a warehouse floor for the participating companies to examine and sample for laboratory analyses. Each company graded the tobacco according to the types they normally use in their manufacturing. In addition, they also rated each lot of tobacco for its physical quality characteristics according to the previously described quality index.

In general, the 1963 season was dry and cool giving conditions that produce fairly heavy body and high nicotine. The test at Hardin's was planted on time and all entries started off and grew well. However, with a fairly cool, rainy season, a normal size crop was produced. Just prior to the first harvest, a heavy rain caused the tobacco to turn yellow and somewhat affected the general growth. After about the second priming, severe wind and a hail storm broke leaves and damaged all varieties seriously.

Edmund transplanted during a dry period but had ample rain for a fair growing season. Some large rains during the harvesting period caused disease to show up in the tobacco, particularly leaf diseases. Also, there was considerable black shank in several plots, particularly the Hicks. However, the growing season was generally good and the quality was very good.

Matthis transplanted in a dry period and followed with irrigation. Heavy rains May 20th caused some stunting in the tobacco. Following the rains in May, the tobacco was topdressed with more nitrogen and due to a lack of excess water to leach some of the nitrogen from the soil, the tobacco showed severe signs of excess nitrogen. This affected the growth characteristics and the quality of the cured leaf.

The test at Harper's was transplanted during a cold, dry, windy period and had difficulty obtaining a stand. It remained dry until the middle of May, when excess rains caused a small amount of drowning. There was 26% hail damage on May 20th and July 27th together. The cool, dry, early season and wet, late season severely affected the quality of the cured leaf.

Jackson transplanted during a dry, cool period and had a dry period until the middle of June; after that, the season was favorable. The cool, dry period affected the size of plant growth causing medium to heavy-bodied tobacco. However, considering the season, the quality was reasonably good.

The test at Harrell's was transplanted in a fairly dry period and following this had moderate rainfall throughout the season, fairly well distributed. The season was such that a medium to heavy-bodied crop of tobacco was produced, which weighed very heavy. The general characteristics of the tobacco in the field were good, however, the cured leaf had a dull grey color.

McLeod transplanted when it was reasonably dry and hot. The tobacco was irrigated following transplanting. The rainfall was adequate throughout the remainder of the season. The plants made very good growth and had reasonably good quality in the cured leaf.

King transplanted during a fairly good season and had good rainfall in the early stage of growth. After heavy rain around the middle of May, the tobacco was topdressed with additional nitrogen and this was followed by a fairly dry period throughout most of the remaining growing season; consequently, the nitrogen was all taken up by the plant and not leached through the soil, causing a severe deterioration in quality of the tobacco due to excess nitrogen. However, the tobacco was allowed to remain in the field to become thoroughly ripe and this resulted in giving a mature crop with a fair amount of smoking type tobacco in it.

Buchan transplanted during a fairly good season and had a fair growing season throughout. However, the tobacco was irrigated twice in July. This field had severe Granville Wilt damage to all varieties except NC 95. What tobacco was in the field had fairly good quality, but the diseased plants affected the quality on the varieties which were susceptible to Granville Wilt.

Cobb had a fairly good season early, following transplanting, but due to the dry season had to irrigate five times. The tobacco appeared to utilize too much of the nitrogen applied to the soil and grew fairly rough causing deterioration in the quality. There was some black shank on some of the moderate to susceptible varieties.

Evans had a very dry growing season, especially during the time when the tobacco was making its major growth. Irrigation was applied but did not seem to make the tobacco grow as it should. The weather was cool, especially at night, during the curing season which affected the curing of the tobacco. The quality of the lower portion of the plant appeared to be reasonably good, however, the upper portion of the plant showed a dull color.

Lawson had a very dry season throughout the entire period, causing the tobacco to be extremely poor in quality.

These farm crops appeared to represent the areas in which they were produced. Where the season was reasonably good, the quality of tobacco was reasonably good; where the season was extremely dry, the tobacco appeared to be heavier and had less desirable characteristics in the cured leaf.

RESULTS AND DISCUSSION

The data are discussed under the headings (1) Official Variety Test and (2) Cooperative Variety Evaluation Tests. Individual location data are presented but are discussed only to emphasize specific points.

Official Variety Test

The data presented in Tables 1, 2, and 3 are summary data for various years and locations and indicate how varieties have been performing over a period of years at various locations.

In Table 1 the data are percentage comparisons with the average performance of Hicks Broadleaf for the period 1953 to 1963. The varieties with the higher number of comparisons have been included in the tests from two to eleven years and give a more accurate estimate of their general performance, while the varieties with four or five comparisons have been in the test only one year. Most varieties in Table 1 maintain their same relative position for value per acre as they do for yield. However, there were exceptions, Hicks Broadleaf, NC 95, Coker 319 and McNair 12 improved their relative ranking in value per acre because of their high value per one hundred pounds. Varieties such as Coker 187-Hicks and Speight G-19 dropped in ranking for value which is indicative of their lower quality.

In Table 2, seven varieties and lines that were common to the 1961, 1962 and 1963 tests are compared for a large number of characteristics. The same general trend was shown in these varieties during

all years. All varieties yielded about the same except for Hicks Broadleaf which was slightly lower. Speight G-5 had the highest acre value. Hicks Broadleaf was the earliest to flower and all other varieties flowered about the same time. All varieties had about average percent nicotine, however, Speight G-5 was lowest of the group tested. All varieties were in an average range for other chemical and agronomic traits.

In Table 3, twenty-one varieties and breeding lines that were common to the 1962 and 1963 tests are compared with respect to a large number of characteristics. Several varieties and lines exceeded a yield of 2400 pounds per acre. Speight G-5, Speight G-35, Va. 187 and NC 744-21 exceeded $1,500 per acre. Several other varieties had an acre value greater than $1,400. Speight G-5 was just under the range of 15% of the average of Hicks and NC 95 for percent nicotine while several lines including Bissette's H-0-9, Speight G-35 and NC 744-21 were considerably below this accepted range. These data indicate that there are a large number of varieties with black shank resistance which will give high returns per acre, thus giving growers a wide choice of varieties for planting.

The average performance of varieties and lines compared at five locations in 1963 is shown in Table 4. There was some variety x location interaction for the characters studied, however, it probably was not sufficient to affect the choosing of a variety to plant. Varieties tended to perform the same relative to each other, that is, they did not make major shifts. The variety x location

mean squares were used for computation of L.S.D. values. By using a lattice design, the detection of small differences was possible. The entries shown at the top of Table 4 are commercially available varieties, whereas those in the lower portion are breeding lines. The cool, dry season caused lower yields of less desirable tobacco than that in the 1962 tests.

Commercially Available Varieties

Of the 13 commercially available varieties tested in 1963, all yielded equal to or greater than Hicks, and had as high or higher value per acre than Hicks. The cool, dry season caused varieties to yield more nearly the same than under conditions more favorable for maximum expression of growth. There was a fairly wide spread for dollars per hundredweight, ranging from a low of $54.15 to a high of $60.50, for Bell 29 and McNair 12, respectively. The quality rating followed the same general pattern as did the dollars per hundredweight. Due to the range used in assigning the quality index (1 to 5, with 1 being best), varieties seemed to be quite similar, however, small differences are important in this index and are significant. Considering all entries in the test, there was a high correlation (.75) between the value per hundredweight and the quality index, indicating that the two are giving a somewhat similar picture. If the tobaccos are normal in physical appearance this would be expected. However, in past years when varieties had poor color or texture these factors may not have been reflected in the government grade. In 1963, however, the grading

standards were changed markedly to more nearly reflect quality and according to the dollars per hundredweight and the quality index shown in this table, it appears that the grades do reflect quality according to price to a rather large extent. This is a change for the better in evaluating tobaccos, since it does separate the more desirable from the less desirable types. For example, considering all entries, there was a range in value per hundredweight from 45.58 to 62.68, much more than in previous years. Likewise, there was a range from 4.3 to 2.9 for all entries for the quality index. Varieties do differ for quality characteristics and the data show this factor.

Most varieties were intermediate in their flowering habit, ranging from 2 to 7 days later than Hicks Broadleaf. All varieties had more leaves per plant than Hicks, although the maximum difference was only 4 leaves. Data were collected on internode length on the basal, middle and upper part of the plant. Information of this nature would be useful to the engineer in developing mechanical harvesting equipment. The range was small, but significant, in the lower two stalk positions. Reams 266 and Coker 187-Hicks had a high ground sucker count. Varieties were quite similar in their number of axillary suckers per plant, although there were statistical differences. Bell 29 and Speight G-10 had the lowest axillary sucker count per plant. Measurements on leaf size indicated that Reams 266, Speight G-3, Bell 29, Coker 187-Hicks and Speight G-5

would be classified as broadleaf types. There was little difference in leaf size among other varieties and most would be considered as medium to narrow leaf types. This has been the direction of selection by breeders in recent times and has produced varieties that tend to more nearly resemble those of the old line type.

Certain factors are related to yield and are indicative of the yields that one can expect from a variety. For example, there is a high correlation (.84) between yield and leaf number, indicating that more leaves per plant gives higher yields. The regression of leaves on yield indicated that each additional leaf per plant between 14 and 22 leaves added 99 pounds per acre for these entries tested. A correlation of .84 existed between yield and days to flower. Each additional day's delay to flower after 46 days added 46 pounds to the yield per acre. Late flowering varieties tended to have more leaves per plant than the early ones. Leaf number and days to flower are only two of many criteria affecting yield, yet information of this nature is beneficial to the breeder in aiding him in the selection of high yielding varieties.

Quality is divided into visual appearance and physical and chemical characteristics. The visual characteristics can be readily seen by the eye, whereas the chemical characteristics must be determined in the laboratory. Data on several chemical constituents that are associated with quality are presented in Table 4. Most of the varieties appear to have satisfactory chemical compositions,

however, Coker 187-Hicks and Speight G-5 are low in nicotine content as compared with the other varieties. Within limits, it is generally assumed that the higher the ratio of nitrogen-to-nicotine, the less desirable the tobacco since it does not age satisfactorily. This ratio is also used as an indication of chemical balance within the plant. All of the varieties had a ratio below 1.00 this season since the cool, dry weather tended to produce tobacco with a fairly high nicotine content. The total nitrogen content was also increased but not as much as the nicotine. Consequently, the ratios are lower. In general, a nicotine content of about 1.75-2.75 per cent in a normal year is satisfactory to the trade. However, due to the season all varieties have a higher content than this in these tests. Under these conditions varieties must be compared with standard varieties which have a known performance.

Bell 29 and McNair 12 had a higher proportion of their alkaloid in the form of nornicotine than the other varieties. Several varieties showed some cherry red in the cured leaf. They were McNair 12, Speight G-10, McNair 20 and Hicks Broadleaf. All of the varieties appeared to be in the acceptable range for reducing sugars.

The ratio (reducing sugar/nicotine) was calculated as a measure of the relationship of the carbohydrates to the alkaloid fraction. To be of value the constituents included in the ratio must be within the acceptable range. A higher ratio tends to indicate mildness and smoothness while a very low ratio may be indicative of a harsh irritating smoke. If the ratio is too high, it might indicate

that the tobacco is too mild to be acceptable to the smoker. There was a rather narrow range among entries.

In Figure 2 the relationship of nicotine percentage, yield and varieties is shown for the commercially available varieties in the 1962 tests for all locations. In general, the moderate yielding varieties, such as Hicks Broadleaf, Speight G-19, McNair 30 and and McNair 20, have a higher per cent nicotine than the higher yielding varieties such as Coker 187-Hicks and Speight G-5. A correlation of - 0.72 existed between nicotine and yield. For each 100-pound increase in yield between 1900 and 2800 pounds per acre, there was a decrease of .18 per cent nicotine content. Nicotine and yield potential are genetically controlled. However, these traits are also markedly influenced by environment. Nicotine varied from 76 to 93 pounds per acre for McNair 12 and Speight G-19, respectively The higher per cent nicotine generally gave more pounds of nicotine per acre.

The nitrogenous constituents in flue-cured tobacco normally influence the usefulness of this class of tobacco and are considered the most important group of chemical constituents in determining quality. In addition to those already mentioned, the following constituents were determined on the tests located at Whiteville, Rocky Mount and Oxford: percent of total nitrogen soluble, alpha amino nitrogen, water soluble acids and pH. A summary of these data are shown in Table 4.

The percentage of the total nitrogen that is soluble has been used to assess how well a tobacco will age as exemplified by reddening or darkening in color and proper aroma development. A range of 60 - 65 per cent soluble nitrogen in tobacco is associated with tobaccos which age properly. However, this must be studied in relation to maturity. The level of alpha amino nitrogen generally can be correlated with increased immaturity. Although all the varieties were within the above mentioned range, there was considerable variation. Likewise, there was variation in the amount of alpha amino nitrogen. To properly evaluate a tobacco all constituents must be considered in relation to each other.

Information on disease resistance is presented in Table 5. Data were collected on Black Shank, Granville Wilt, Fusarium Wilt, and Root Knot. A relative rating of the level of resistance to each disease is given for each variety based on this and other disease tests. The disease tests were critical at all locations. It will be noted that several varieties are classed as being less resistant to Black Shank than in 1962 due to additional data. Much progress appears to have been made in developing disease resistant varieties released in the last few years. There are several varieties such as NC 95, McNair 20, Speight G-10 and Coker 187-Hicks carrying a high level of resistance to Black Shank. NC 95 also carries a high level of resistance to Granville Wilt, Fusarium Wilt, and Root Knot. Several other varieties carry a moderate to high level of resistance to Granville Wilt and Fusarium Wilt. Brown Spot developed rather

severely at several locations, however, an index was not determined on the cured leaf due to variability of the data. However, notes were made in the field at Whiteville and the following varieties had the least Brown Spot: Hicks, McNair 20, NC 95, Coker 319, Speight G-5 and McNair 30.

Certain agronomic characteristics of varieties were observed during growth in the field and after curing. There was severe leaf drop in the Oxford test so a count was made at four different periods to record the severity. The following varieties had heavy leaf drop: Reams 266, Speight G-19, Speight G-3, NC 95, Bell 29 and McNair 12. The growing conditions were such at the Oxford location as to cause rather severe breakage of the leaves and the record refers to those leaves that actually broke off the plant. Breakage ranged as high as 20 per cent on some varieties.

Advanced Breeding Lines

There are several advanced breeding lines which show potential from a yield standpoint (Table 4). Reams A-6, NC 744-21, NC 717-1-2, and Speight G-35 had yields of 2700 pounds or more; however, each of these were deficient in both physical and chemical qualities. Among lines in these tests there appears to be a fairly broad genetic base for yield, plant type and physical and chemical traits. However, selection pressure must be severe for the desirable characters.

Most of the advanced breeding lines had a moderate number of leaves per plant and were average in height and maturity. In general,

the breeding lines had a moderate sucker count; however, several produced too many ground suckers. About one-half of the lines were of the broad leaf type. However, the ones with the narrower leaves generally resembling the old line types tended to have slightly more desirable levels of chemical characteristics.

Chemically, there were several of the breeding lines which appeared to be out of balance. Eleven lines had a nitrogen-to-nicotine ratio in excess of .74, which, when compared to the standards would be questionable. Likewise, these same lines had a very low level of nicotine and were below the minimally acceptable range in comparison with the checks. Most of the lines that are undesirable chemically have extremely high yields, however, these same lines have poor color, body and texture. Although the nor-nicotine was generally low for most lines, several showed cherry red in the cured leaf. These were NC 2316C, NC 2514C, Reams D-10, Va. 187, PD 690, NC 744-21, Va. 1104, Coker 62-323-24S, Bell 60, and Speight G-35. Lines with over five per cent of their alkaloids in the form of nornicotine should be rigidly selected in the breeding program to eliminate the converter plants. Va. 187 and PD 690 had a high per cent nornicotine.

The relationship of nicotine and yield is shown in Figure 3. In general, the slope of the regression line has been lowered from 1962, indicating that some of the high yielding lines have lower levels of nicotine. Nicotine varied from 61 to 95 pounds per acre

for Bissette's H-0-9 and NC TG-2, respectively. High yielding varieties with a high level of nicotine can be developed as indicated by this range of genetic material. Selection pressure must be continually for increased levels of nicotine along with the increase in yield. However, not only must a variety have adequate yield and nicotine, it must also meet farmer and trade acceptance. Severe leaf breakage at Oxford was noted on PD 32, Reams A-6, Speight G-8, Speight G-20, NC 744-21, PD 406, NC 1626-5C, NC 717-1-2, Bell 60, and Bissette's H-0-9. This characteristic should be noted in a breeding program and selected against.

Most of the breeding lines are showing high levels of resistance to the black shank. All lines except three were either highly or moderately resistant to black shank, and six lines had high resistance to Root Knot. However, only three lines had high and eight moderate resistance to Granville Wilt. There are not adequate lines with sufficient resistance to Granville Wilt. With the current breeding stocks and genetic material developed over a 20 year period, disease resistance and yield should no longer be a problem to incorporate into a variety, but when physical and chemical characteristics along with good handling qualities are included, desirable levels of all these characteristics are difficult to obtain. In other words, the more selection criteria imposed on the breeding program the more difficult it is to include

all at a desirable level in a single variety. This remains a challenge to the tobacco breeder.

Several of the entries are carrying resistance to the Root Knot nematode species Meloidogyne incognita, which is the most prevalent species in North Carolina soils. There are other species of Root Knot nematodes, as well as the meadow and stunt nematodes, to which these lines are susceptible. Some of the entries carrying this source of resistance are also showing good quality characteristics.

In field rating for Brown Spot at Whiteville the lines Speight G-36, Bell 60, Speight G-20, Bell 52, Bissette's H-0-9, NC TG-2, PD 29, Coker 62-213-27S, Coker 62-297-98S, McNair 151, and PD 32 were most severely injured. Very little Brown Spot was noted on NC TG-4, NC 2519C, NC 2570C, NC 1626-5C, NC 2512C, and PD 406.

In Table 11, data on physical quality appraisal by the co-operating companies are shown for certain entries from the Whiteville, Rocky Mount and Oxford locations of the Official Variety Test. Due to the dry, cool season, the tobacco in all varieties tended to be heavy and have poor color and texture at the Rocky Mount and Oxford locations, and received low ratings.

Cooperative Variety Evaluation Test

A summary of the results from the Cooperative Variety Evaluation Test by belts is presented in Table 12. The varieties included in Group A had yields ranging from Hicks with 1784 to Speight G-5 with 2102 pounds per acre. Speight G-5 also had the highest

dollar return. The lines shown in Group B yielded from 2060 pounds per acre for NC 2326C to 2327 for NC 2512C compared with Hicks which yielded 1745 pounds. The value per acre ranged from $1077 per acre for Hicks to $1515 for NC 2512C.

The tobacco from each of the locations was displayed on a warehouse floor and appraised for the physical quality factors; color, body and texture, by leaf and research personnel of each of the seven participating tobacco companies. The results of this quality appraisal are shown in Table 13. The ratings varied from company to company but tended to follow the same general pattern.

In Table 14, an index of the amount graded is shown by grower for each variety. If all eight companies could grade all of a variety into their grades, then it received an index of 8. However, since companies have different requirements, all would not tend to grade each lot of tobacco. In Group A there was less Speight G-5 graded than any other variety. The other four entries had about the same amount graded. In Group B there was more tobacco graded in the breeding lines NC 2326C and NC TG-2 and this was about the same as Hicks.

The farmers were asked to rate the varieties for grower desirability with their preference as 1. The data are shown in Table 15. The rating indicated that the growers preferred Coker 319 and NC 95. In Group B, NC 2326C was consistently rated best by most growers. NC 2514C was next.

Both physical and chemical information should be considered along with yield and value data relative to a variety or line. Also the handling characteristics are important. A thorough evaluation of breeding material is important if quality is to be maintained and improved.

These various indices are not conclusive but show trends in preferences which are indicative of the acceptability and desirability of these tobaccos by manufacturers and growers. All information should be studied relative to varietal performance for all characteristics and not just a selected one or two.

LOCATION OF TESTS

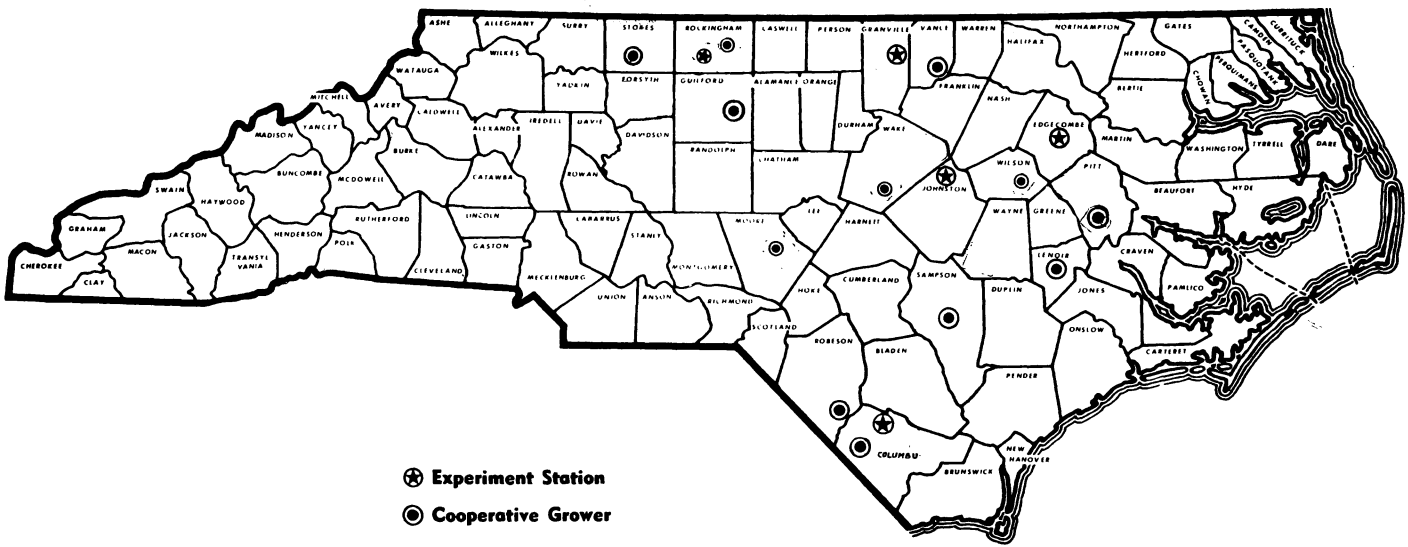

Figure 1

Table 1. Percentage comparison with the mean of Hicks Broadleaf of certain flue-cured tobacco varieties in the Official Tobacco Variety Test. 1953 - 1963.

Standard Hicks Broadleaf	Acre Yield 1950 lbs.		Acre Value $ 1165		Value per 100 lbs. $ 59.33	
No. Comparisons*						
13	Speight G-3	(114)	Speight G-5	(114)	McNair 12	(101)
9	Speight G-5	(114)	Speight G-10	(110)	Hicks Broadleaf	(100)
25	Coker 187-Hicks	(113)	NC 95	(109)	White Gold	(100)
13	Speight G-10	(112)	Speight G-3	(108)	Coker 319	(100)
9	Bell 29	(112)	McNair 12	(107)	Speight G-5	(100)
18	NC 95	(111)	Coker 319	(106)	Speight G-10	(99)
24	NC 75	(109)	Coker 187-Hicks	(105)	NC 95	(98)
9	McNair 30	(107)	NC 75	(103)	Speight 31	(98)
18	McNair 12	(106)	McNair 30	(103)	McNair H-2	(97)
13	McNair 10	(106)	Bell 29	(103)	Coker 128	(97)
9	Coker 319	(106)	Reams 61	(103)	McNair 10	(97)
4	Reams 61	(106)	Speight 31	(102)	McNair 20	(97)
14	Speight 31	(105)	McNair 10	(102)	McNair 30	(97)
9	Speight G-19	(105)	McNair H-2	(101)	Reams 61	(97)
19	McNair H-2	(104)	Hicks Broadleaf	(100)	Bell 15	(96)
34	Vesta 5	(103)	Coker 80F	(99)	Coker 80F	(96)
13	Coker 80F	(103)	Coker 128	(98)	Coker 156	(96)
9	Reams 266	(103)	Speight G-19	(98)	NC 75	(95)
14	Coker 128	(102)	Reams 266	(98)	SC 58	(95)
4	Coker 111	(101)	White Gold	(98)	Reams 266	(95)
49	Hicks Broadleaf	(100)	Vesta 5	(97)	Vesta 5	(94)
20	Bell 15	(99)	Bell 15	(96)	Speight G-3	(94)
15	Bell 16	(99)	Coker 111	(94)	Speight G-19	(93)
25	Coker 187	(98)	McNair 20	(93)	Coker 187-Hicks	(93)
11	White Gold	(98)	Bell 16	(91)	Oxford 1-181	(93)
9	McNair 20	(96)	Coker 187	(88)	Coker 111	(93)
10	SC 58	(92)	Coker 156	(88)	Bell 29	(92)
5	Coker 156	(92)	SC 58	(87)	Bell 16	(92)
16	Oxford 1-181	(86)	Oxford 1-181	(80)	Coker 187	(90)

* Number of times appeared in tests with Hicks Broadleaf.

Table 2. Comparison of certain varieties and lines over three years in the Official Tobacco Variety Test. 1961, 1962, and 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	Days to Flower	Leaves per Plant	Height of Plant
Hicks Broadleaf	2121	1319	62.18	49	16.6	44
NC 95	2345	1436	61.38	55	19.4	46
McNair 12	2236	1400	62.65	54	18.2	43
Speight G-3	2414	1414	58.55	55	18.2	48
Speight G-5	2453	1523	62.19	54	18.8	47
Speight G-10	2368	1450	61.25	54	19.9	46
NC TG-2	2411	1387	57.62	53	18.7	44

Varieties or lines	Suckers per plant Ground	Suckers per plant Leaf Axil	Width of leaf (in.) 5th	Width of leaf (in.) 10th	Width of leaf (in.) 15th	Length of leaf (in.) 5th	Length of leaf (in.) 10th	Length of leaf (in.) 15th
Hicks Broadleaf	1.8	23.2	9.1	12.1	13.1	22.9	24.6	23.1
NC 95	1.8	19.9	8.9	11.0	13.3	19.2	22.0	22.3
McNair 12	.9	19.3	9.6	11.8	13.3	20.4	22.9	22.3
Speight G-3	.8	20.6	9.8	13.0	15.0	20.2	23.9	23.7
Speight G-5	.8	19.9	9.1	11.7	14.4	20.6	24.1	24.1
Speight G-10	.4	18.2	7.5	9.8	12.5	19.5	22.6	23.3
NC TG-2	.4	17.9	8.2	10.9	13.5	20.4	23.3	23.0

Varieties or lines	Nic. %	Nornic. %	Red. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Hicks Broadleaf	2.93	.16	19.81	2.21	.81	7.70
NC 95	2.85	.14	19.18	2.24	.84	7.52
McNair 12	2.63	.19	19.62	2.29	.92	8.50
Speight G-3	2.69	.12	20.03	2.11	.84	8.62
Speight G-5	2.35	.21	19.23	2.12	1.00	9.92
Speight G-10	2.58	.16	20.53	2.25	.97	9.65
NC TG-2	2.87	.13	17.80	2.30	.86	7.11

Table 3. Comparison of certain varieties and lines over two years in the Official Tobacco Variety Test. 1962 and 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	Days to Flower	Leaves per Plant	Height of Plant
Hicks Broadleaf	2220	1374	61.78	48	16.4	44
NC 95	2410	1466	60.79	54	19.2	46
McNair 12	2287	1409	61.52	53	18.0	43
Speight G-3	2483	1448	58.26	54	18.0	48
Speight G-5	2530	1561	61.60	54	18.8	47
Speight G-10	2422	1454	60.03	53	19.7	46
NC TG-2	2456	1391	56.52	52	18.4	44
Coker 319	2350	1449	61.56	54	19.4	45
McNair 20	2129	1272	59.66	50	17.6	45
McNair 30	2370	1416	59.64	51	17.4	46
Bell 29	2482	1410	56.90	54	17.8	50
Speight G-19	2327	1331	57.08	56	20.6	46
Reams 266	2264	1322	58.38	56	18.8	50
Bissett's H-0-9	2462	1476	60.06	56	19.4	47
Speight G-35	2721	1654	60.70	60	21.6	52
Va. 187	2514	1556	62.02	51	18.0	43
Va. 1104	2383	1336	56.24	54	17.9	50
PD 29	2412	1391	57.52	52	18.4	46
PD 690	2390	1305	54.67	57	17.8	53
NC TG-4	2407	1441	60.04	54	19.2	47
NC 744-21	2784	1652	59.54	57	20.6	49

Varieties or lines	Suckers per plant Ground	Suckers per plant Leaf Axil	Width of leaf (in.) 5th	Width of leaf (in.) 10th	Width of leaf (in.) 15th	Length of leaf (in.) 5th	Length of leaf (in.) 10th	Length of leaf (in.) 15th
Hicks Broadleaf	1.8	24.4	9.3	12.2	13.4	23.6	25.3	23.6
NC 95	1.7	20.8	9.2	11.4	13.5	19.6	22.5	22.6
McNair 12	1.0	20.2	9.8	12.0	13.6	20.8	23.2	22.5
Speight G-3	.6	21.8	9.9	13.2	15.6	20.3	24.1	24.2
Speight G-5	.7	20.5	9.2	12.0	14.6	20.7	24.4	24.4
Speight G-10	.4	18.4	7.8	10.0	12.6	19.8	23.0	23.8
NC TG-2	.4	18.4	8.4	11.1	13.8	20.5	23.4	23.2
Coker 319	1.6	23.4	8.4	10.6	12.8	20.5	23.6	24.0
McNair 20	.9	22.6	8.3	11.0	13.1	21.6	24.4	23.2
McNair 30	1.1	21.4	8.6	11.7	13.7	22.0	24.8	23.7
Bell 29	.7	17.8	9.1	12.4	15.2	20.0	24.1	24.0
Speight G-19	2.4	24.0	8.4	11.0	13.5	20.3	24.0	24.4
Reams 266	4.8	20.8	10.2	13.5	15.5	19.6	23.0	22.8
Bissett's H-0-9	2.4	22.0	9.4	11.8	14.4	19.0	22.8	23.8
Speight G-35	1.2	18.2	7.0	9.4	12.6	18.0	21.4	23.6
Va. 187	.6	17.8	8.2	10.9	13.0	20.2	23.4	23.4
Va. 1104	.6	16.8	10.2	14.0	16.4	21.3	25.2	24.5
PD 29	1.2	18.0	8.7	11.2	13.4	20.8	23.5	23.6
PD 690	1.2	17.8	10.8	14.4	15.8	18.8	23.0	22.6
NC TG-4	2.1	21.7	7.4	10.2	12.9	20.9	24.1	23.9
NC 744-21	.6	18.4	9.4	12.2	15.0	19.8	23.6	24.6

Table 3. Continued. Comparison of certain varieties and lines over two years in the Official Tobacco Variety Test. 1962 and 1963.

Varieties or lines	Nic. %	Nornic. %	Red. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Hicks Broadleaf	3.10	.18	20.36	2.27	.80	8.06
NC 95	3.06	.14	19.83	2.33	.83	7.42
McNair 12	2.84	.24	19.51	2.38	.90	7.80
Speight G-3	2.88	.14	20.76	2.16	.82	8.53
Speight G-5	2.58	.12	19.80	2.20	.96	9.63
Speight G-10	2.93	.20	21.32	2.33	.88	8.68
NC TG-2	3.14	.17	18.24	2.38	.84	6.97
Coker 319	2.82	.16	18.38	2.42	.94	7.70
McNair 20	3.24	.18	19.66	2.36	.80	7.26
McNair 30	3.12	.17	19.37	2.34	.82	7.43
Bell 29	2.68	.16	18.44	2.34	.96	8.11
Speight G-19	3.16	.18	19.50	2.34	.84	7.80
Reams 266	2.82	.16	20.65	2.38	.92	8.52
Bissett's H-0-9	2.08	.13	17.86	2.22	1.18	9.75
Speight G-35	2.31	.14	24.54	2.00	.91	11.54
Va. 187	2.92	.22	21.38	2.22	.84	8.74
Va. 1104	3.14	.23	18.42	2.38	.83	7.27
PD 29	3.12	.18	19.38	2.36	.84	7.34
PD 690	2.98	.30	19.39	2.41	.86	7.34
NC TG-4	3.03	.16	20.99	2.34	.82	8.02
NC 744-21	2.49	.13	21.22	2.12	.92	9.95

Table 4. Comparison of varieties in 1963 for certain characteristics. Combined for five locations. Whiteville, Rocky Mount, Clayton, Oxford and Reidsville.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI[1/]	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	2056	1219	59.27	3.3	47	16.1	39	1.6	2.4	3.7
NC 95	2295	1351	58.88	3.4	53	18.7	42	1.7	2.4	2.6
Reams 266	2325	1352	58.31	3.6	55	19.6	46	1.7	2.6	2.7
Coker 319	2248	1355	60.40	3.4	53	18.8	40	1.6	2.2	2.5
Speight G-3	2404	1367	56.98	3.9	54	18.3	43	1.6	2.3	3.1
Bell 29	2409	1292	54.15	3.7	53	17.6	45	1.8	2.6	3.2
McNair 30	2257	1307	58.08	3.5	50	16.9	41	1.6	2.4	3.3
McNair 12	2191	1322	60.50	3.5	52	18.0	39	1.6	2.4	2.5
Speight G-10	2311	1349	58.54	3.6	52	19.4	41	1.7	2.2	2.5
Coker 187-Hicks	2399	1439	60.18	3.6	54	18.9	44	1.6	2.5	2.9
Speight G-19	2251	1268	56.39	3.8	54	20.3	41	1.5	2.1	2.5
Speight G-5	2449	1448	59.29	3.7	54	19.2	43	1.6	2.3	2.7
McNair 20	2016	1166	58.08	3.2	49	17.2	39	1.6	2.3	3.0
Advanced Breeding Lines										
NC 717-1-1	2636	1464	55.67	3.8	57	21.5	50	1.7	2.4	2.7
Speight G-36	2433	1319	54.61	3.7	56	20.0	45	1.6	2.3	2.7
NC 2512C	2393	1436	59.99	3.6	52	18.2	42	1.6	2.3	2.9
PD 32	2424	1312	54.49	4.0	55	20.1	40	1.6	2.1	2.3
NC TG-2	2381	1278	53.66	3.9	51	17.8	40	1.6	2.1	3.1
NC 2570C	2314	1290	56.14	3.7	49	17.6	42	1.7	2.5	3.0
Coker 62-297-98S	2406	1360	56.94	3.9	56	19.6	44	1.7	2.3	2.6
NC 2316C	1914	1201	62.68	2.9	46	16.4	38	1.6	2.3	3.2
NC 2320C	1941	1184	60.96	3.2	46	14.5	36	1.6	2.6	3.8
NC 2514C	2282	1366	60.07	3.5	50	17.2	40	1.6	2.2	3.1
PD 48	2146	1277	59.55	3.6	50	17.7	42	1.6	2.6	3.0
Reams A-6	2719	1586	58.26	3.8	56	20.6	44	1.7	2.2	2.4
Speight G-8	2243	1018	45.58	4.3	52	18.1	44	1.7	2.4	3.1
Coker 62-213-27S	2407	1479	61.58	3.6	55	19.8	44	1.7	2.4	2.6
Reams D-10	2594	1484	57.35	3.8	62	21.3	49	1.7	2.5	2.7
Speight G-20	2547	1478	58.17	3.6	54	20.2	44	1.6	2.3	2.5
Coker 62-247-48S	2338	1352	57.89	3.7	56	19.4	45	1.7	2.5	2.7
PD 690	2367	1194	50.91	4.0	56	18.6	50	1.8	2.9	3.3
Va. 187	2351	1445	61.56	3.3	50	17.4	38	1.6	2.3	2.8
NC 2543C	2443	1235	50.86	3.8	54	18.1	44	1.7	2.6	3.1
NC 744-21	2747	1579	57.69	3.8	56	20.7	46	1.6	2.4	2.6
NC 2519C	2234	1185	53.19	3.7	51	17.4	40	1.6	2.2	3.1
Bell 52	2547	1506	59.29	3.8	62	22.4	50	1.7	2.4	2.5
McNair 151	2335	1373	58.98	3.8	53	17.9	39	1.6	2.3	2.6
NC 2326C	2145	1335	62.12	3.0	48	16.2	40	1.6	2.4	3.7
NC TG-4	2295	1314	57.76	3.7	52	18.5	42	1.7	2.3	2.7
PD 406	2136	1166	54.49	3.7	52	18.7	42	1.7	2.4	2.8
Va. 1104	2314	1215	52.83	4.0	53	17.8	44	1.8	2.4	3.1
NC 1626-5C	2244	1249	55.98	3.5	51	17.3	43	1.6	2.5	3.4
Coker 62-323-24S	2688	1555	57.97	3.6	56	20.2	41	1.6	2.2	2.3
NC 717-1-2	2724	1473	53.78	4.0	58	21.8	48	1.6	2.4	2.6
PD 29	2215	1236	56.07	3.8	50	18.1	42	1.6	2.4	2.9
Reams B-1	2553	1447	56.82	3.6	56	20.7	50	1.7	2.6	2.8
Bell 60	2153	1294	60.42	3.4	49	17.5	41	1.6	2.4	3.1
Speight G-35	2770	1657	59.68	3.7	60	22.1	49	1.6	2.3	2.6
Bissette's H-0-9	2398	1400	58.67	3.8	55	19.0	43	1.7	2.3	2.7
L.S.D. (.05)	176	155	3.99	.4	2	1.6	2	.1	.2	.4
(.01)	233	204	5.26	.5	3	2.1	3	.1	.2	.5
C. V. (%)	7	10	6	9	3	7	6	9	8	12

[1/] Rating of 1 to 5 with 1 being best.

Table 4. Continued. Combined analyses for five locations.

Varieties	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	2.8	28.9	9.7	12.0	12.0	23.9	24.8	22.3
NC 95	2.5	24.2	9.2	11.7	12.8	19.8	22.3	21.6
Reams 266	3.5	23.8	9.5	13.2	14.6	19.6	23.0	22.3
Coker 319	1.9	27.5	8.6	10.8	12.2	20.9	23.6	22.7
Speight G-3	.8	26.9	9.8	13.1	14.6	20.4	23.6	23.1
Bell 2[a]	1.1	22.2	9.2	12.6	14.3	20.6	24.0	22.8
McNair 30	1.7	25.5	9.0	11.9	12.9	22.6	24.6	22.8
McNair 12	1.5	23.3	9.7	11.7	12.6	20.7	22.8	21.6
Speight G-10	.8	22.8	7.7	10.0	11.7	20.0	23.1	23.0
Coker 187-Hicks	4.4	25.6	9.6	12.3	14.0	20.4	22.8	22.2
Speight G-19	2.9	28.5	8.3	11.1	13.5	20.4	23.9	23.6
Speight G-5	1.0	25.3	9.0	11.8	13.8	20.0	23.5	23.2
McNair 20	1.5	26.7	8.4	11.1	12.3	21.8	24.2	22.4
Advanced Breeding Lines								
NC 717-1-1	4.0	23.2	8.5	11.0	13.7	17.8	21.3	22.4
Speight G-36	1.5	23.7	7.8	10.6	12.6	18.9	22.5	22.2
NC 2512C	2.0	26.9	8.6	11.0	12.6	20.7	23.4	23.0
PD 32	1.9	25.6	8.5	11.8	14.4	19.0	22.5	22.9
NC TG-2	.8	22.6	8.5	11.2	13.2	21.1	23.4	22.4
NC 2570C	3.7	25.4	10.0	12.7	13.6	20.5	23.1	21.6
Coker 62-297-98S	1.2	22.6	8.5	11.4	13.9	19.4	22.8	23.0
NC 2316C	2.5	28.1	8.6	10.9	11.2	22.2	22.9	20.8
NC 2320C	2.8	28.2	9.6	11.7	11.4	23.5	24.1	21.5
NC 2514C	2.2	27.7	8.2	10.7	11.5	21.6	24.4	22.8
PD 48	1.3	20.2	8.1	11.0	12.4	21.0	23.5	22.6
Reams A-6	.5	23.8	8.5	11.0	14.0	18.6	21.8	22.9
Speight G-8	4.1	29.4	9.1	11.7	13.0	19.6	22.4	21.8
Coker 62-213-27S	4.8	25.5	9.0	11.8	13.8	19.2	22.3	22.4
Reams D-10	1.1	24.5	8.1	10.5	13.6	17.6	21.0	22.6
Speight G-20	1.6	25.0	7.8	10.4	13.0	19.6	23.2	23.8
Coker 62-247-48S	4.7	25.8	9.4	11.7	13.1	19.4	22.3	21.8
PD 690	1.7	22.6	9.8	13.8	14.8	18.0	22.2	21.6
Va. 187	1.2	22.0	8.5	11.0	12.1	20.8	23.2	22.3
NC 2543C	2.1	23.0	9.0	12.1	14.0	19.9	24.1	23.5
NC 744-21	1.0	22.1	9.1	12.2	14.8	20.0	23.8	23.9
NC 2519C	3.2	25.4	8.4	11.0	12.0	20.7	23.3	22.4
Bell 52	4.5	23.8	8.6	11.0	13.6	18.4	21.8	22.9
McNair 151	.7	23.5	8.5	11.4	12.1	21.4	24.6	22.8
NC 2326C	.7	24.8	9.6	11.8	12.3	23.0	24.2	21.7
NC TG-4	3.4	27.6	7.8	10.8	12.5	21.6	24.2	22.8
PD 406	2.3	25.0	8.2	11.3	12.1	20.4	22.6	21.2
Va. 1104	1.1	21.2	10.3	14.2	15.2	21.6	25.0	23.3
NC 1626-5C	.8	24.6	9.6	12.4	13.2	20.1	23.0	21.1
Coker 62-323-24S	.4	21.2	7.6	10.4	13.0	18.4	22.2	23.0
NC 717-1-2	3.5	23.7	8.0	10.7	13.6	18.7	22.6	24.0
PD 29	1.9	21.8	8.7	11.3	12.8	20.5	22.8	22.3
Reams B-1	3.6	28.0	9.5	11.8	14.0	19.0	22.2	23.4
Bell 60	1.7	24.6	9.0	11.6	12.8	21.3	23.7	23.0
Speight G-35	2.0	23.0	6.7	9.1	12.4	17.6	21.0	23.3
Bissette's H-0-9	2.8	26.2	9.0	11.7	14.0	18.9	22.4	23.2
L.S.D. (.05)	.8	2.9	1.1	1.1	.8	1.3	1.2	1.1
(.01)	1.1	3.9	1.4	1.4	1.0	1.7	1.6	1.4
C. V. (%)	36	10	10	8	7	7	5	5

Table 4. Continued. Combined analyses of five locations - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios		
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N %	Nic. / T.A. X 100	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties							
Hicks Broadleaf	4.12	.20	19.08	2.54	95.4	.63	5.12
NC 95	3.89	.23	19.21	2.51	94.4	.65	5.11
Reams 266	3.43	.22	20.06	2.41	94.0	.72	6.40
Coker 319	3.60	.22	17.72	2.66	94.2	.76	5.21
Speight G-3	3.60	.20	19.84	2.36	94.7	.67	6.01
Bell 29	3.42	.24	17.76	2.52	93.4	.75	5.51
McNair 30	4.01	.17	19.34	2.56	95.9	.65	5.21
McNair 12	3.48	.30	19.22	2.54	92.0	.74	5.88
Speight G-10	3.80	.24	20.59	2.49	94.0	.67	5.68
Coker 187-Hicks	3.27	.21	19.21	2.42	94.0	.76	6.35
Speight G-19	4.11	.21	19.24	2.57	95.1	.64	4.97
Speight G-5	3.35	.17	18.88	2.40	95.4	.73	6.12
McNair 20	4.18	.24	18.82	2.60	94.6	.63	4.86
Advanced Breeding Lines							
NC 717-1-1	3.24	.19	21.40	2.33	94.4	.75	7.43
Speight G-36	3.88	.18	18.57	2.56	95.6	.67	5.18
NC 2512C	3.48	.22	18.77	2.44	93.8	.72	5.63
PD 32	3.75	.22	18.65	2.55	94.4	.69	5.30
NC TG-2	3.99	.23	18.06	2.54	94.5	.66	4.94
NC 2570C	3.40	.22	19.05	2.45	93.9	.76	6.29
Coker 62-297-98S	3.78	.22	17.86	2.46	94.5	.67	4.99
NC 2316C	4.12	.26	18.66	2.58	94.0	.64	4.89
NC 2320C	4.49	.23	18.47	2.56	95.1	.59	4.57
NC 2514C	3.82	.24	20.60	2.44	94.0	.65	5.78
PD 48	3.95	.22	17.72	2.69	94.7	.70	4.87
Reams A-6	2.61	.16	21.31	2.14	94.2	.84	8.73
Speight G-8	2.90	.19	19.46	2.34	93.8	.82	7.01
Coker 62-213-27S	2.82	.19	19.46	2.32	93.7	.85	7.48
Reams D-10	2.73	.19	20.47	2.26	93.5	.85	8.04
Speight G-20	3.07	.14	20.66	2.35	95.6	.78	7.20
Coker 62-247-48S	3.73	.26	20.75	2.41	93.5	.65	5.86
PD 690	3.64	.48	18.17	2.66	88.3	.74	5.19
Va. 187	3.73	.31	20.11	2.44	92.3	.67	5.69
NC 2543C	3.61	.23	17.92	2.54	94.0	.72	5.36
NC 744-21	3.14	.17	21.50	2.27	94.9	.73	7.26
NC 2519C	3.98	.23	17.58	2.58	94.5	.67	4.78
Bell 52	2.42	.18	19.52	2.27	93.1	.97	8.49
McNair 151	3.94	.22	19.96	2.46	94.7	.64	5.47
NC 2326C	3.97	.24	19.12	2.52	94.3	.65	5.25
NC TG-4	3.80	.24	19.25	2.58	94.0	.69	5.38
PD 406	4.22	.25	17.40	2.60	94.4	.62	4.30
Va. 1104	3.97	.28	17.02	2.64	93.4	.68	4.66
NC 1626-5C	3.57	.28	18.04	2.51	92.7	.71	5.45
Coker 62-323-24S	3.65	.24	20.31	2.31	93.8	.65	5.96
NC 717-1-2	3.21	.15	21.57	2.19	95.5	.72	7.67
PD 29	4.00	.25	19.02	2.55	94.1	.66	5.02
Reams B-1	2.78	.19	21.75	2.30	93.6	.84	8.28
Bell 60	3.93	.26	19.29	2.54	93.8	.65	5.11
Speight G-35	2.71	.21	24.82	2.12	92.8	.79	9.60
Bissette's H-O-9	2.55	.18	18.37	2.33	93.4	.93	7.38
L.S.D. (.05)	.36	.06	1.91	.13		.06	1.06
(.01)	.48	.08	2.52	.17		.07	1.40
C. V. (%)	9	36	10	6		9	16

Table 4. Continued. Combined analyses of five locations - 1963.

Varieties or lines	% Total Nitrogen Soluble	Alpha Amino Nitrogen	Water Soluble Acids	pH
	Commercially Available Varieties			
Hicks Broadleaf	63.77	.183	4.33	5.27
NC 95	63.21	.176	4.56	5.25
Reams 266	61.22	.186	3.85	5.36
Coker 319	60.80	.224	4.41	5.23
Speight G-3	61.96	.185	4.07	5.27
Bell 29	61.16	.212	4.06	5.34
McNair 30	62.93	.181	4.23	5.31
McNair 12	62.32	.200	4.33	5.22
Speight G-10	61.88	.171	4.12	5.23
Coker 187-Hicks	60.14	.195	4.04	5.25
Speight G-19	63.19	.199	4.37	5.35
Speight G-5	60.36	.183	3.99	5.27
McNair 20	63.47	.190	4.27	5.26
	Advanced Breeding Lines			
NC 717-1-1	60.19	.170	3.90	5.30
Speight G-36	61.82	.215	4.27	5.24
NC 2512C	62.70	.200	4.04	5.40
PD 32	60.24	.195	4.07	5.28
NC TG-2	61.71	.176	4.20	5.23
NC 2570C	62.43	.196	4.21	5.35
Coker 62-297-98S	63.37	.179	4.20	5.23
NC 2316C	64.23	.184	4.43	5.25
NC 2320C	62.62	.173	4.36	5.18
NC 2514C	62.82	.169	3.99	5.37
PD 48	62.14	.217	4.33	5.25
Reams A-6	58.48	.160	3.54	5.34
Speight G-8	59.58	.186	3.92	5.32
Coker 62-213-27S	59.27	.205	3.86	5.30
Reams D-10	59.40	.183	3.62	5.30
Speight G-20	60.30	.186	3.67	5.22
Coker 62-247-48S	63.91	.184	4.24	5.28
PD 690	63.41	.227	4.40	5.20
Va. 187	63.09	.172	4.05	5.25
NC 2543C	62.08	.208	3.92	5.36
NC 744-21	59.23	.154	3.77	5.33
NC 2519C	62.90	.200	4.05	5.34
Bell 52	58.99	.194	3.62	5.31
McNair 151	63.04	.151	4.34	5.20
NC 2326C	63.36	.186	4.12	5.34
NC TG-4	63.43	.192	4.32	5.13
PD 406	63.50	.206	4.71	5.25
Va. 1104	63.54	.220	4.41	5.37
NC 1626-5C	61.87	.212	4.18	5.33
Coker 62-323-24S	62.41	.172	4.36	5.22
NC 717-1-2	57.92	.140	3.61	5.24
PD 29	63.41	.221	4.35	5.26
Reams B-1	59.70	.183	3.65	5.34
Bell 60	63.08	.182	4.36	5.23
Speight G-35	61.11	.146	3.92	5.24
Bissette's H-0-9	59.22	.224	3.88	5.32
L.S.D. (.05)	1.82	.034	.28	.09
(.01)	2.41	.045	.37	.12
C. V. (%)	3	14	5	2

Relationship of Nicotine Percentage and Yield for Commercially Available Varieties 1963

Official Variety Test—5 Locations

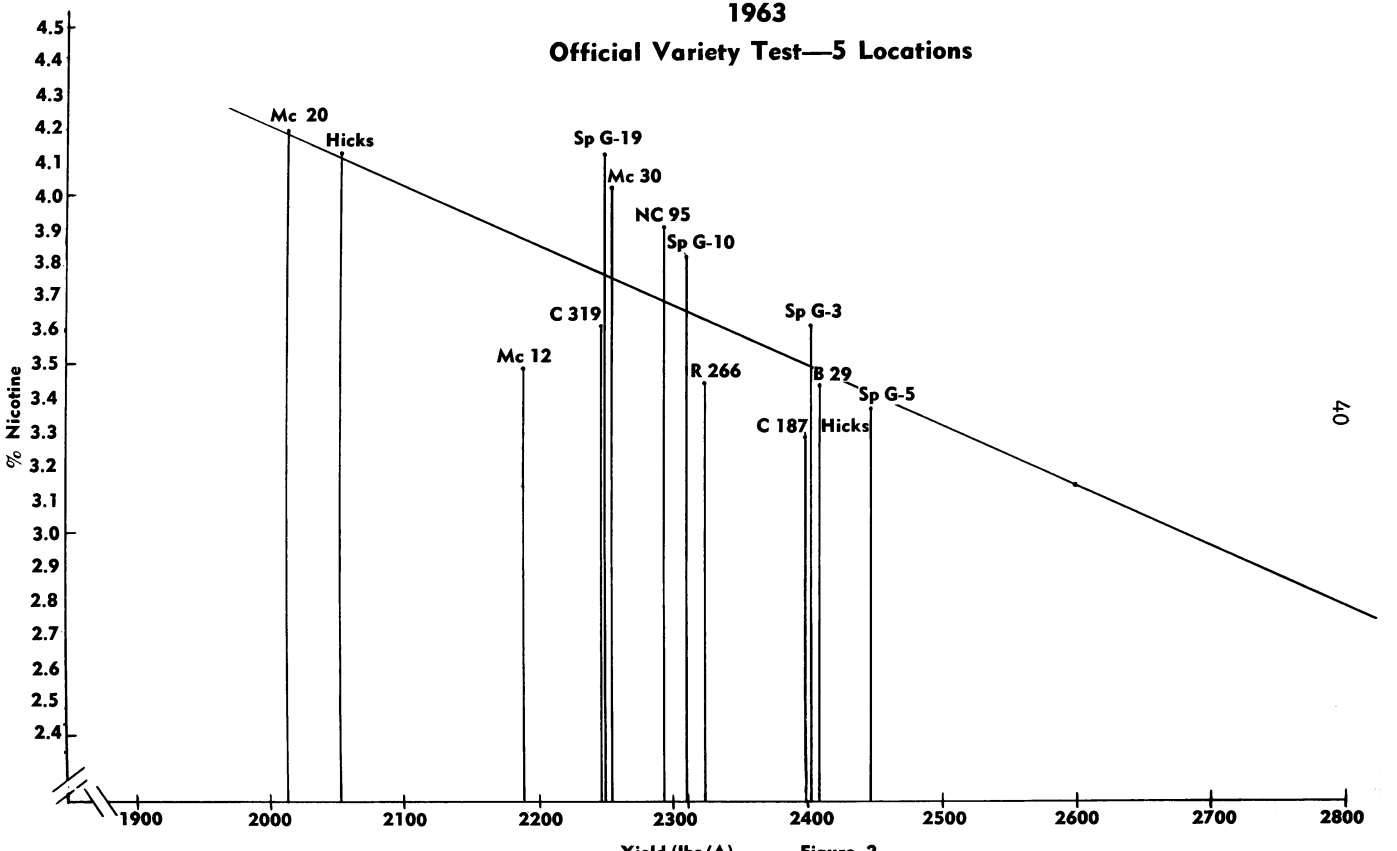

Figure 2

Relationship of Nicotine Percentage and Yield for Advanced Breeding Lines 1963

Official Variety Test—5 Locations

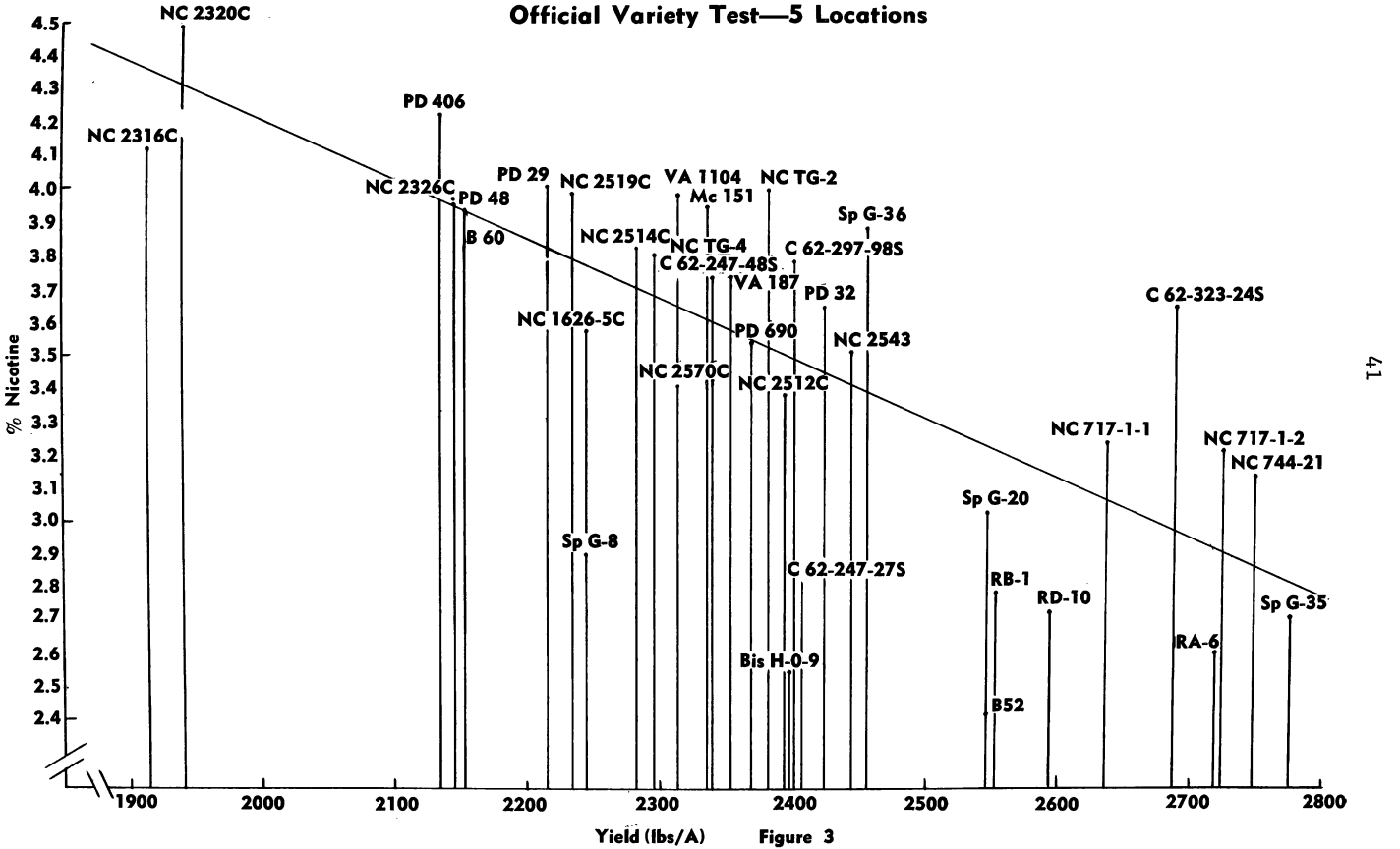

Figure 3

Table 5. Summary information on disease resistance using 1963 data.[1/]

Varieties or lines	Black Shank % Dis. Davis & Rocky Mt.	Black Shank Level of resist.	Granville Wilt % Dis.[2/]	Granville Wilt Level of resist.	Fusarium Wilt % Dis.[3/]	Fusarium Wilt Level of resist.	Root Knot Level of resist.[5/]
Commercially Available Varieties							
Hicks Broadleaf	86.5	Susc.	100	Susc.	71	Low	
NC 95	5.5	High	30	High	17	High[4/]	High
Reams 266	11.4	Mod.	35	High[4/]	25	High[4/]	
Coker 319	14.5	Mod.	94	Low[4/]	25	High	
Speight G-3	25.5	Mod.[4/]	92	Susc.	84	Susc.	
Bell 29	9.0	Mod.[4/]	66	Mod.	46	High[4/]	
McNair 30	30.1	Mod.	96	Susc.[4/]	50	Mod.[4/]	
McNair 12	15.3	Mod.	26	High[4/]	63	Low[4/]	
Speight G-10	17.9	High	75	Low[4/]	75	Susc.	
Coker 187-Hicks	7.8	High[4/]	69	Mod.	50	Mod.	
Speight G-19	10.8	Low[4/]	100	Susc.	13	Mod.	
Speight G-5	17.2	Mod.	100	Susc.	34	Mod.[4/]	
McNair 20	10.9	High	100	Susc.	13	High[4/]	
Advanced Breeding Lines							
NC 717-1-1	12.5	High	76	Susc.	29	High	
Speight G-36	0.9	High	72	Mod.	79	Susc.	
NC 2512C	8.8	High	88	Susc.	17	High	High
PD 32	3.9	High	78	Low	67	Mod	
NC TG-2	6.1	High	88	Low	88	Susc.	
NC 2570C	11.4	High	90	Susc.	13	High	High
Coker 62-297-98S	8.8	High	43	High	29	High	
NC 2316C	9.7	Mod.	96	Susc.	33	Mod.	
NC 2320C	16.5	Mod.	98	Susc.	46	Mod.	
NC 2514C	20.6	Mod.	98	Susc.	38	Mod.	High
PD 48	17.9	Mod.	96	Low	50	Mod.	
Reams A-6	5.2	High	79	Mod.	63	Low	
Speight G-8	11.8	Mod.	80	Low	17	High	
Coker 62-213-27S	3.0	High	42	High	42	Mod.	
Reams D-10	21.8	Mod.	82	Mod.	58	Low	
Speight G-20	9.5	Mod.	98	Susc.	88	Susc.	
Coker 62-247-48S	3.9	High	54	Mod.	54	Mod.	
PD 690	10.1	High	96	Susc.	46	Mod.	
Va. 187	14.4	High	83	Low	59	Low	
NC 2543C	11.3	High	53	Mod.	17	High	High
NC 744-21	9.6	High	79	Susc.	33	Mod.	
NC 2519C	34.3	Mod.	74	Low	71	Low	High
Bell 52	7.3	High	42	High	67	Susc.	
McNair 151	18.9	Mod.	63	Low	71	Susc.	
NC 2326C	24.3	High[4/]	98	Susc.	17	High	
NC TG-4	9.2	High[4/]	90	Susc.	59	Low	
PD 406	3.7	Mod.[4/]	61	Mod.	33	High	
Va. 1104	25.6	Low[4/]	80	Low	92	Susc.	
NC 1626-5C	20.2	Mod.	82	Low	22	High	High
Coker 62-323-24S	9.8	High	78	Low	63	Low	
NC 717-1-2	18.9	Mod.[4/]	78	Low	33	Mod.	
PD 29	9.6	High[4/]	96	Susc.[4/]	100	Susc.	
Reams B-1	25.6	Mod.	96	Susc.[4/]	59	Low	
Bell 60	46.9	Low[4/]	71	Mod.	59	Low	
Speight G-35	23.6	Low[4/]	92	Low	84	Susc.	
Bissette's H-0-9	3.0	High	68	Mod.	71	Low	

1/ Ratings for level of resistance based on regional data for 1 or more years and assigned by a sub-committee of the Regional Flue-cured Variety Evaluation Committee. Although only data obtained in N. C. are included in this table, information from other states in the region were utilized to establish levels of resistance.

2/ Field data obtained by inoculating plants with a bacterial suspension in transplant water. Each plant received approximately 5 billion viable bacterial cells.

3/ Greenhouse test.

4/ Varies from established 1963 class because of data from regional tests or from previous years. Some entries classified on basis of data from previous years.

5/ Resistant to Meloidogyne incognita, most prevalent species of root knot nematode occurring on flue-cured tobacco.

Table 6. Comparison of varieties for certain characteristics - TV 138 Whiteville - 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	2498	1669	67.34	3.6	54	18.4	42	1.4	2.3	3.3
NC 95	2460	1587	64.57	3.4	59	18.7	44	1.7	2.2	3.0
Reams 266	2388	1553	65.57	3.7	62	17.9	46	1.6	2.5	3.4
Coker 319	2448	1679	68.38	3.0	58	20.6	44	1.5	1.9	2.7
Speight G-3	2551	1662	64.93	3.9	60	17.9	43	1.4	2.2	3.8
Bell 29	2557	1587	61.59	3.9	58	17.4	44	1.6	2.4	3.6
McNair 30	2439	1676	65.93	3.7	56	18.5	43	1.4	2.1	3.6
McNair 12	2197	1422	65.55	3.6	56	17.7	41	1.5	2.2	3.2
Speight G-10	2419	1575	64.74	3.7	57	20.4	44	1.4	2.0	3.1
Coker 187-Hicks	2405	1579	65.48	3.6	61	18.5	48	1.4	2.4	4.1
Speight G-19	2346	1426	60.51	3.6	60	20.2	43	1.3	1.9	3.3
Speight G-5	2638	1763	66.25	3.7	58	19.5	46	1.4	2.1	3.3
McNair 20	2319	1499	65.22	3.7	56	18.6	42	1.4	1.9	3.4
Advanced Breeding Lines										
NC 717-1-1	2805	1771	63.36	3.5	62	20.6	50	1.5	2.1	3.3
Speight G-36	2460	1594	65.33	3.7	60	20.1	46	1.4	2.1	3.2
NC 2512C	2758	1818	64.73	3.5	58	19.7	42	1.3	2.0	3.2
PD 32	2483	1494	60.38	4.1	60	20.2	43	1.3	2.0	3.2
NC TG-2	2639	1567	58.44	4.0	57	19.7	43	1.4	1.8	3.4
NC 2570C	2452	1532	61.89	3.6	55	18.0	44	1.6	2.3	3.5
Coker 62-297-98S	2433	1635	66.11	3.5	63	18.5	46	1.5	2.4	3.6
NC 2316C	2240	1506	67.11	3.7	53	19.1	43	1.4	2.1	3.1
NC 2320C	2366	1532	65.14	3.6	53	16.5	41	1.6	2.3	3.7
NC 2514C	2537	1658	64.74	3.6	56	17.5	42	1.5	2.2	3.5
PD 48	2326	1573	68.19	3.6	57	18.1	45	1.4	2.4	3.5
Reams A-6	2655	1660	61.36	3.9	60	18.2	45	1.7	2.3	3.1
Speight G-8	2391	1205	49.86	4.4	57	17.5	44	1.6	2.2	3.7
Coker 62-213-27S	2347	1544	66.22	3.5	60	19.9	46	1.6	2.2	3.0
Reams D-10	2583	1541	60.33	3.7	65	19.7	49	1.5	2.4	3.4
Speight G-20	2682	1676	63.26	3.8	58	19.1	45	1.5	2.1	3.2
Coker 62-247-48S	2348	1476	63.40	3.9	60	18.3	47	1.7	2.3	3.3
PD 690	2432	1447	60.75	3.9	60	17.2	51	1.5	2.7	4.4
Va. 187	2499	1627	65.65	3.5	57	18.7	41	1.4	2.0	3.4
NC 2543C	2674	1464	55.26	4.0	61	18.5	44	1.3	2.1	3.7
NC 744-21	2863	1885	65.45	3.6	61	19.2	47	1.5	2.1	3.4
NC 2519C	2555	1554	61.40	3.9	58	18.5	43	1.3	2.1	3.7
Bell 52	2505	1622	63.61	3.8	65	21.9	50	1.5	2.1	3.0
McNair 151	2615	1600	61.36	4.0	60	19.4	44	1.5	2.1	3.2
NC 2326C	2566	1718	67.51	3.4	54	18.3	44	1.5	2.2	3.4
NC TG-4	2374	1592	67.29	3.7	58	18.9	45	1.7	2.1	3.0
PD 406	2373	1486	62.97	3.6	58	21.8	43	1.4	2.2	2.5
Va. 1104	2532	1449	55.74	4.1	60	16.8	46	1.7	2.5	4.0
NC 1626-5C	2476	1420	57.66	3.6	57	16.7	42	1.5	2.2	4.3
Coker 62-323-24S	2798	1764	63.65	3.7	61	20.1	43	1.4	2.0	2.9
NC 717-1-2	2921	1864	64.56	3.7	60	20.7	50	1.5	2.2	3.3
PD 29	2373	1471	62.42	3.8	54	19.5	42	1.3	2.1	3.1
Reams B-1	2434	1485	61.52	3.6	61	20.5	50	1.4	2.4	3.3
Bell 60	2339	1541	65.36	3.4	55	18.5	43	1.5	2.2	3.2
Speight G-35	2725	1758	64.49	3.6	62	20.7	47	1.4	2.0	3.3
Bissette's H-0-9	2397	1479	63.03	4.0	59	17.8	45	1.6	2.2	3.5
L.S.D. (.05)	141	147	4.21	.5	2	2.2	2	.3	.3	.6
(.01)	186	196	5.59	.6	3	3.0	3	.5	.4	.8
C. V. (%)	3	6	4	8	3	7	3	14	9	11

Table 6. Continued. TV 138 Whiteville - 1963.

Varieties or lines	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	1.8	35.8	9.8	11.7	12.9	27.7	27.8	24.2
NC 95	1.0	24.7	10.7	12.2	12.7	24.5	24.5	21.8
Reams 266	1.7	20.7	13.0	16.0	15.9	23.9	25.6	22.9
Coker 319	.6	30.7	9.8	10.5	11.7	25.7	26.4	23.1
Speight G-3	.5	23.9	13.5	14.8	15.4	26.8	26.3	23.8
Bell 29	.2	22.5	12.7	14.3	15.0	26.1	26.4	22.1
McNair 30	.5	29.3	10.2	12.3	13.9	28.3	26.4	24.0
McNair 12	1.3	23.6	11.7	11.9	12.9	24.6	24.3	21.7
Speight G-10	.0	22.3	9.2	10.1	12.9	25.5	25.8	24.0
Coker 187-Hicks	4.7	25.9	12.0	13.3	14.8	24.8	24.0	22.0
Speight G-19	2.4	27.0	11.0	12.8	14.1	25.9	27.0	25.2
Speight G-5	.6	26.5	11.9	13.0	14.3	26.9	27.0	23.9
McNair 20	.5	33.5	9.3	11.0	12.8	26.6	25.9	23.2
Advanced Breeding Lines								
NC 717-1-1	2.1	20.3	11.9	14.7	14.9	24.2	25.7	23.2
Speight G-36	.1	21.7	9.3	11.0	12.4	23.9	24.5	22.3
NC 2512C	1.0	31.3	10.2	12.7	14.3	25.9	26.6	25.5
PD 32	1.3	24.4	10.9	12.9	14.3	24.2	24.9	23.7
NC TG-2	.5	20.6	9.7	10.5	13.6	25.5	24.9	22.8
NC 2570C	4.2	25.7	13.5	14.1	14.1	25.4	24.4	20.8
Coker 62-297-98S	.4	18.5	11.5	13.0	13.4	23.9	24.9	23.1
NC 2316C	1.2	32.9	9.3	10.7	12.0	26.5	25.0	23.2
NC 2320C	1.6	33.7	10.3	10.7	11.7	27.7	26.0	23.2
NC 2514C	1.5	31.7	8.9	10.9	12.4	25.5	26.2	23.1
PD 48	.4	21.1	9.9	11.9	12.7	27.3	25.7	23.4
Reams A-6	.2	21.4	11.6	12.5	13.1	24.1	25.0	23.9
Speight G-8	2.8	31.4	12.6	12.5	12.5	26.2	24.9	22.2
Coker 62-213-27S	5.3	23.8	12.7	13.1	13.9	24.6	25.0	22.8
Reams D-10	.4	21.4	10.9	12.3	13.4	22.6	24.9	23.1
Speight G-20	1.4	22.1	11.4	12.6	13.3	26.3	27.2	23.5
Coker 62-247-48S	4.7	24.4	12.1	12.5	13.3	23.0	23.5	22.0
PD 690	1.5	21.3	14.2	14.9	14.3	23.3	23.7	21.4
Va. 187	.4	22.1	9.3	10.7	12.3	25.4	25.0	22.4
NC 2543C	1.6	23.3	11.9	14.1	14.3	25.4	27.8	24.3
NC 744-21	.2	20.5	13.4	14.7	15.9	26.0	27.0	24.4
NC 2519C	4.2	29.7	9.7	11.3	11.9	26.4	25.4	23.7
Bell 52	5.1	22.4	11.4	12.4	13.3	22.7	24.2	23.6
McNair 151	.1	22.9	10.7	12.1	11.9	28.1	27.0	23.5
NC 2326C	.0	29.4	10.5	11.9	14.4	27.4	26.9	25.1
NC TG-4	1.2	28.8	8.8	10.1	11.9	27.3	26.0	22.1
PD 406	1.3	29.3	9.0	10.9	12.3	25.3	23.6	21.8
Va. 1104	.2	17.3	13.2	15.4	15.7	26.0	27.1	24.1
NC 1626-5C	.3	24.3	12.1	13.5	12.5	25.1	24.2	20.1
Coker 62-323-24S	.1	23.3	10.6	12.5	13.4	24.0	26.0	23.3
NC 717-1-2	2.7	20.9	11.5	13.5	14.3	26.0	27.8	24.8
PD 29	.3	22.5	10.6	11.5	13.3	25.3	24.2	22.3
Reams B-1	2.8	27.3	12.4	12.6	13.9	23.0	24.2	22.9
Bell 60	.6	28.8	10.6	12.0	13.6	25.4	25.7	24.0
Speight G-35	.7	20.8	9.5	10.3	12.5	24.5	25.2	23.7
Bissette's H-0-9	1.9	24.9	11.8	12.7	13.7	24.3	24.6	22.9
L.S.D. (.05)	1.7	4.2	1.3	1.3	1.8	1.8	1.7	1.9
(.01)	2.2	5.6	1.7	1.8	2.4	2.3	2.2	2.5
C. V. (%)	72	10	7	7	8	4	4	5

Table 6. Continued. TV 138 Whiteville - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios	
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties						
Hicks Broadleaf	2.87	.16	18.45	2.24	.76	6.22
NC 95	3.36	.15	15.21	2.41	.72	4.61
Reams 266	2.31	.13	17.71	2.14	.93	7.83
Coker 319	2.56	.09	15.54	2.35	.92	6.12
Speight G-3	2.58	.19	14.62	2.07	.80	5.60
Bell 29	2.53	.13	14.66	2.32	.91	5.82
McNair 30	3.12	.18	16.23	2.46	.79	5.40
McNair 12	2.69	.24	17.67	2.33	.87	6.69
Speight G-10	2.76	.14	16.83	2.29	.83	6.11
Coker 187-Hicks	2.40	.19	15.62	2.21	.93	6.61
Speight G-19	2.98	.19	14.93	2.31	.78	5.12
Speight G-5	2.48	.12	14.96	2.12	.86	6.07
McNair 20	3.04	.24	16.18	2.30	.76	5.42
Advanced Breeding Lines						
NC 717-1-1	2.03	.15	18.57	1.93	.96	9.20
Speight G-36	2.70	.10	15.40	2.32	.85	5.60
NC 2512C	2.75	.20	14.94	2.28	.84	5.72
PD 32	2.71	.28	14.19	2.36	.86	5.29
NC TG-2	2.73	.17	14.02	2.43	.87	5.26
NC 2570C	2.80	.16	14.25	2.29	.82	5.02
Coker 62-297-98S	2.49	.14	15.86	2.11	.86	6.49
NC 2316C	2.97	.29	16.19	2.39	.79	5.50
NC 2320C	3.13	.10	18.06	2.22	.69	5.86
NC 2514C	2.94	.14	16.20	2.28	.77	5.53
PD 48	2.80	.16	14.19	2.39	.85	5.06
Reams A-6	1.89	.13	17.09	2.02	1.07	9.46
Speight G-8	2.16	.17	16.74	2.14	.98	7.70
Coker 62-213-27S	2.18	.17	14.90	2.26	1.05	6.89
Reams D-10	1.75	.12	19.53	1.87	1.07	11.32
Speight G-20	2.16	.10	17.04	2.10	.97	8.07
Coker 62-247-48S	2.89	.19	15.77	2.30	.79	5.41
PD 690	2.57	.28	15.08	2.34	.91	5.83
Va. 187	2.72	.23	16.57	2.26	.83	6.10
NC 2543C	2.48	.19	12.86	2.27	.92	5.16
NC 744-21	2.46	.15	17.42	2.13	.86	7.23
NC 2519C	2.98	.18	13.08	2.33	.79	4.48
Bell 52	1.71	.12	14.71	2.09	1.24	8.80
McNair 151	2.91	.18	16.30	2.23	.76	5.60
NC 2326C	2.72	.21	16.39	2.28	.83	6.02
NC TG-4	2.89	.14	15.72	2.60	.89	5.41
PD 406	3.38	.24	14.42	2.32	.70	4.38
Va. 1104	3.18	.23	12.96	2.49	.79	4.31
NC 1626-5C	2.78	.29	14.20	2.32	.84	5.07
Coker 62-323-24S	2.82	.20	15.85	2.19	.78	5.56
NC 717-1-2	2.04	.10	19.55	1.86	.90	9.67
PD 29	2.66	.17	15.29	2.23	.84	5.68
Reams B-1	2.01	.14	18.91	2.03	1.02	9.48
Bell 60	2.99	.21	15.62	2.30	.75	5.35
Speight G-35	2.16	.16	19.94	2.03	.92	9.09
Bissette's H-0-9	1.89	.11	12.02	2.26	1.18	6.24
L.S.D. (.05)	.37	.10	1.95	.22	.12	1.44
(.01)	.50	.14	2.60	.29	.16	1.91
C. V. (%)	9	37	8	6	8	14

Table 6. Continued. TV 138 Whiteville - 1963.

Varieties or lines	% Total Nitrogen Soluble	Alpha Amino Nitrogen	Water Soluble Acids	pH
	Commercially Available Varieties			
Hicks Broadleaf	60.67	.176	3.91	5.55
NC 95	62.77	.212	4.40	5.50
Reams 266	59.23	.198	3.24	5.67
Coker 319	58.77	.225	4.10	5.50
Speight G-3	60.73	.231	3.51	5.52
Bell 29	59.40	.235	3.40	5.69
McNair 30	62.90	.208	4.08	5.58
McNair 12	61.00	.190	3.86	5.38
Speight G-10	58.80	.179	3.62	5.59
Coker 187-Hicks	59.50	.221	3.77	5.52
Speight G-19	61.87	.238	3.96	5.75
Speight G-5	59.90	.208	3.72	5.53
McNair 20	61.17	.199	3.65	5.58
	Advanced Breeding Lines			
NC 717-1-1	57.77	.175	3.59	5.52
Speight G-36	59.20	.209	3.91	5.51
NC 2512C	63.57	.228	3.81	5.77
PD 32	58.53	.219	3.36	5.68
NC TG-2	60.40	.220	3.89	5.45
NC 2570C	62.23	.235	3.86	5.66
Coker 62-297-98S	60.83	.202	3.56	5.44
NC 2316C	63.13	.205	4.17	5.47
NC 2320C	61.03	.187	3.78	5.41
NC 2514C	62.03	.210	3.72	5.63
PD 48	60.67	.236	3.89	5.55
Reams A-6	58.07	.173	3.27	5.62
Speight G-8	58.67	.197	3.53	5.61
Coker 62-213-27S	59.87	.268	3.67	5.59
Reams D-10	57.17	.167	3.05	5.61
Speight G-20	58.17	.199	3.02	5.44
Coker 62-247-48S	62.10	.214	3.97	5.54
PD 690	60.13	.208	3.97	5.42
Va. 187	61.83	.183	3.48	5.50
NC 2543C	59.43	.217	3.44	5.68
NC 744-21	56.67	.183	3.59	5.69
NC 2519C	61.63	.220	3.61	5.65
Bell 52	58.03	.239	3.15	5.59
McNair 151	60.87	.171	3.91	5.51
NC 2326C	59.97	.205	3.62	5.67
NC TG-4	62.70	.207	3.85	5.23
PD 406	62.53	.232	4.40	5.50
Va. 1104	63.40	.276	4.20	5.65
NC 1626-5C	60.90	.240	3.78	5.58
Coker 62-323-24S	61.73	.218	4.22	5.49
NC 717-1-2	57.23	.159	3.32	5.49
PD 29	62.10	.242	3.73	5.58
Reams B-1	58.23	.206	3.14	5.70
Bell 60	61.80	.214	3.85	5.43
Speight G-35	58.77	.157	3.81	5.41
Bissette's H-0-9	57.80	.247	3.55	5.66
L.S.D. (.05)	3.27	.034	.43	.19
(.01)	4.32	.045	.57	.25
C. V. (%)	3	10	7	2

Table 7. Comparison of varieties for certain characteristics - TV 140 Rocky Mount - 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	1807	1093	59.72	3.4	42	14.1	38	1.7	2.4	5.1
NC 95	2402	1392	58.01	3.1	50	19.5	45	1.7	2.5	2.5
Reams 266	2281	1276	55.94	3.5	51	20.3	48	1.7	2.5	2.8
Coker 319	2323	1478	63.96	3.3	49	18.9	41	1.7	2.3	2.3
Speight G-3	2466	1424	57.51	3.7	51	19.0	46	1.7	2.4	2.9
Bell 29	2313	1213	52.61	3.6	49	18.7	49	1.9	2.9	3.0
McNair 30	2062	1145	55.83	3.5	47	16.7	41	1.7	2.4	3.4
McNair 12	2385	1459	61.09	3.9	51	19.1	43	1.7	2.6	2.4
Speight G-10	2299	1319	57.39	3.2	48	20.3	44	1.8	2.2	2.5
Coker 187-Hicks	2536	1486	58.55	3.5	51	20.7	47	1.5	2.8	2.6
Speight G-19	2238	1249	55.72	3.4	52	21.9	43	1.4	2.4	2.2
Speight G-5	2463	1497	60.72	3.8	50	20.5	47	1.6	2.3	2.6
McNair 20	1909	1045	54.93	3.2	45	15.7	41	1.7	2.5	3.7
Advanced Breeding Lines										
NC 717-1-1	2550	1386	53.90	3.7	52	22.3	53	1.9	2.6	2.5
Speight G-36	2448	1219	49.61	3.9	53	20.5	46	1.7	2.4	2.5
NC 2512C	2449	1477	60.14	3.1	49	19.1	45	1.6	2.4	2.9
PD 32	2446	1164	47.14	4.1	52	21.3	42	1.6	2.2	2.1
NC TG-2	2259	1266	56.20	3.9	48	17.9	43	1.7	2.4	3.0
NC 2570C	2242	1265	56.30	3.7	47	18.5	44	1.5	2.5	3.1
Coker 62-297-98S	2525	1321	51.86	4.2	54	21.0	45	1.8	2.4	2.3
NC 2316C	1700	963	57.64	3.3	42	16.7	39	1.5	2.2	3.6
NC 2320C	1714	1008	59.19	3.3	41	13.7	39	1.6	2.7	5.1
NC 2514C	2222	1370	61.54	3.6	47	17.5	41	1.6	2.4	3.0
PD 48	2118	1227	57.50	3.6	48	18.4	47	1.6	2.9	3.0
Reams A-6	2766	1570	56.48	3.8	54	21.5	44	1.7	2.3	2.1
Speight G-8	2268	979	42.53	4.2	51	19.5	47	1.7	2.4	2.9
Coker 62-213-27S	2532	1527	59.92	3.4	52	21.9	48	1.6	2.5	2.3
Reams D-10	2733	1504	55.22	4.0	61	22.5	48	1.9	2.5	2.2
Speight G-20	2465	1415	57.05	3.5	50	21.5	46	1.8	2.3	2.3
Coker 62-247-48S	2422	1355	56.11	3.6	52	20.0	46	1.6	2.8	2.6
PD 690	2469	1093	44.47	4.0	56	19.5	52	1.9	3.2	2.8
Va. 187	2230	1331	59.60	3.4	47	17.0	40	1.6	2.5	3.0
NC 2543C	2480	1202	48.70	3.9	51	19.4	48	1.7	2.8	2.9
NC 744-21	2911	1729	59.82	3.7	54	22.3	47	1.6	2.5	2.2
NC 2519C	2208	1030	46.56	3.9	49	17.9	43	1.6	2.4	3.0
Bell 52	2549	1418	55.62	4.0	60	22.5	50	1.8	2.7	2.3
McNair 151	2407	1411	58.41	3.4	49	18.3	42	1.7	2.5	2.6
NC 2326C	1927	1203	62.53	3.1	44	15.5	44	1.6	2.5	4.5
NC TG-4	2253	1366	60.60	3.1	48	18.5	45	1.8	2.6	2.8
PD 406	2121	1134	52.98	3.7	47	17.5	44	1.6	2.6	3.3
Va. 1104	2212	1128	51.10	3.9	50	18.1	45	1.9	2.3	2.9
NC 1626-5C	2219	1195	53.46	3.7	47	17.9	47	1.6	2.6	3.6
Coker 62-323-24S	2814	1556	54.84	3.5	54	23.6	44	1.5	2.3	1.9
NC 717-1-2	2897	1657	57.56	3.6	56	24.3	50	1.6	2.4	2.2
PD 29	2311	1283	55.59	4.0	49	18.6	43	1.6	2.7	2.8
Reams B-1	2682	1539	57.92	3.3	52	22.2	52	2.0	2.8	2.4
Bell 60	2006	1185	59.29	3.3	46	17.3	43	1.7	2.5	3.2
Speight G-35	2595	1589	61.31	3.3	56	23.7	49	1.5	2.4	2.3
Bissette's H-0-9	2504	1433	57.28	3.6	52	20.9	46	1.8	2.5	2.4
L.S.D. (.05)	170	146	4.42	.4	2	1.9	3	.3	.3	.5
(.01)	256	194	5.87	.5	3	2.6	4	.4	.4	.7
C. V. (%)	4	7	5	7	3	6	4	11	8	11

Table 7. Continued. TV 140 Rocky Mount.- 1963.

Varieties or lines	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	3.5	28.6	8.4	12.0	11.5	21.1	25.1	21.0
NC 95	4.1	28.0	7.7	11.1	11.6	17.4	21.3	21.7
Reams 266	4.5	27.5	7.7	12.9	13.4	17.3	22.5	22.1
Coker 319	3.1	29.6	7.1	10.3	11.7	17.7	22.0	23.7
Speight G-3	.7	33.7	9.1	13.7	14.5	17.9	23.1	23.3
Bell 29	1.0	24.3	7.3	11.3	12.9	16.8	22.3	23.3
McNair 30	1.3	28.7	7.7	11.1	11.5	18.5	23.2	20.9
McNair 12	1.9	27.0	8.5	11.5	12.3	18.5	23.4	22.2
Speight G-10	1.0	29.4	7.0	10.2	11.2	17.9	22.9	21.9
Coker 187-Hicks	4.2	29.4	8.3	12.1	14.5	18.1	22.5	23.7
Speight G-19	2.1	32.3	6.9	10.1	13.9	17.1	22.7	24.4
Speight G-5	1.4	30.6	7.8	11.3	13.7	16.5	22.2	23.5
McNair 20	2.2	30.5	6.8	10.7	11.8	18.1	24.5	23.2
Advanced Breeding Lines								
NC 717-1-1	4.1	29.8	6.5	8.7	12.3	14.5	17.7	22.1
Speight G-36	2.6	29.3	6.3	9.9	12.3	16.1	21.6	23.3
NC 2512C	2.4	31.7	7.2	10.6	11.7	17.7	22.3	23.1
PD 32	2.1	29.6	7.5	11.3	14.2	16.0	21.1	24.7
NC TG-2	.9	27.4	7.0	10.8	12.6	17.1	23.1	22.9
NC 2570C	4.1	27.1	8.5	12.6	13.3	17.2	22.7	21.9
Coker 62-297-98S	1.5	28.5	6.3	10.8	13.9	16.3	21.6	24.0
NC 2316C	3.8	33.2	7.7	10.7	10.6	20.0	22.9	19.6
NC 2320C	4.1	32.3	7.9	12.3	12.0	19.7	25.6	22.9
NC 2514C	2.8	31.5	6.7	10.3	11.3	17.8	24.2	24.2
PD 48	1.3	23.8	5.7	9.5	12.2	16.0	22.6	23.6
Reams A-6	.2	27.5	7.3	10.9	14.0	15.9	20.9	23.5
Speight G-8	4.2	31.3	7.3	11.5	13.7	15.8	21.5	22.7
Coker 62-213-27S	4.7	29.5	8.0	11.9	13.3	17.0	21.1	22.1
Reams D-10	1.5	27.2	5.9	8.9	13.5	12.6	18.2	22.8
Speight G-20	2.3	29.5	6.5	9.8	12.8	16.7	22.0	24.7
Coker 62-247-48S	4.7	27.5	8.8	12.4	13.5	18.7	22.9	21.9
PD 690	1.8	23.2	7.9	14.5	14.8	15.0	21.9	20.8
Va. 187	1.7	24.0	7.6	10.5	12.1	17.6	22.4	22.5
NC 2543C	2.4	28.6	7.7	12.6	14.9	16.8	23.3	23.9
NC 744-21	1.5	28.2	6.7	10.5	14.0	15.9	21.5	24.1
NC 2519C	3.1	26.6	7.9	12.1	12.1	18.5	24.5	23.7
Bell 52	4.3	27.1	7.0	10.3	13.3	15.6	20.6	22.8
McNair 151	1.1	27.0	7.2	11.1	12.1	17.7	23.9	23.6
NC 2326C	.8	28.0	8.8	11.9	11.4	20.6	24.6	20.8
NC TG-4	4.4	31.4	5.7	10.0	12.5	16.5	23.1	24.2
PD 406	3.1	25.4	6.9	11.4	11.7	17.1	23.2	21.7
Va. 1104	2.0	27.6	9.5	14.0	15.1	19.7	24.3	23.0
NC 1626-5C	1.1	28.1	8.5	13.0	14.1	18.2	23.9	22.9
Coker 62-323-24S	.7	23.8	6.3	10.1	11.9	14.7	19.9	22.4
NC 717-1-2	4.0	28.0	6.4	9.2	13.8	14.3	20.6	25.5
PD 29	2.8	23.4	8.2	11.0	13.2	18.5	23.1	23.7
Reams B-1	3.6	31.5	8.3	11.1	12.9	16.1	20.7	23.1
Bell 60	2.7	27.3	7.7	11.2	12.4	18.0	23.7	23.9
Speight G-35	1.9	28.4	5.0	8.3	12.2	13.1	18.3	24.3
Bissette's H-0-9	2.9	27.8	8.3	12.4	14.3	16.8	22.6	24.2
L.S.D. (.05)	1.2	4.4	1.3	1.3	1.4	2.3	2.0	2.1
(.01)	1.7	5.8	1.8	1.8	1.9	3.1	2.7	2.8
C. V. (%)	31	9	11	7	7	8	6	6

Table 7. Continued. TV 140 Rocky Mount - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios	
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties						
Hicks Broadleaf	4.62	.12	16.14	2.80	.61	3.56
NC 95	3.83	.30	19.32	2.66	.68	5.02
Reams 266	3.88	.14	17.59	2.75	.70	4.61
Coker 319	3.60	.24	16.39	2.88	.80	4.61
Speight G-3	3.42	.24	18.56	2.60	.76	5.54
Bell 29	3.25	.25	15.79	2.70	.83	4.86
McNair 30	3.94	.17	16.79	2.74	.69	4.30
McNair 12	3.73	.30	15.89	2.87	.76	4.27
Speight G-10	3.99	.18	18.60	2.73	.68	4.62
Coker 187-Hicks	3.50	.19	16.76	2.63	.77	4.82
Speight G-19	4.25	.22	17.01	2.79	.66	4.02
Speight G-5	3.28	.16	17.34	2.58	.78	5.35
McNair 20	4.26	.26	15.91	2.79	.64	3.80
Advanced Breeding Lines						
NC 717-1-1	3.46	.20	18.61	2.54	.74	5.50
Speight G-36	4.27	.18	13.98	2.97	.69	3.33
NC 2512C	3.46	.28	18.89	2.54	.74	5.56
PD 32	3.88	.28	14.60	2.77	.70	3.80
NC TG-2	3.85	.19	15.61	2.73	.69	4.12
NC 2570C	3.49	.16	17.30	2.51	.72	5.07
Coker 62-297-98S	3.78	.27	16.11	2.88	.76	4.35
NC 2316C	4.62	.18	14.65	2.79	.58	3.20
NC 2320C	4.59	.22	14.56	2.95	.62	3.10
NC 2514C	4.03	.31	18.32	2.65	.64	4.49
PD 48	3.98	.24	15.52	2.91	.73	3.91
Reams A-6	2.80	.16	18.81	2.44	.87	6.75
Speight G-8	2.94	.20	17.00	2.56	.86	5.86
Coker 62-213-27S	2.96	.17	18.45	2.51	.84	6.35
Reams D-10	2.85	.23	18.76	2.45	.86	6.69
Speight G-20	3.39	.08	18.59	2.70	.78	5.50
Coker 62-247-48S	3.87	.31	17.73	2.70	.68	4.56
PD 690	3.89	.53	14.87	2.93	.76	3.89
Va. 187	3.79	.35	18.38	2.66	.70	4.83
NC 2543C	3.76	.22	15.65	2.81	.74	4.19
NC 744-21	3.20	.19	17.98	2.43	.75	5.71
NC 2519C	3.82	.28	13.47	2.84	.74	3.56
Bell 52	2.59	.21	17.02	2.51	1.00	6.83
McNair 151	4.14	.24	19.19	2.63	.64	4.66
NC 2326C	4.38	.20	16.84	2.70	.62	3.90
NC TG-4	3.88	.27	18.04	2.71	.69	4.73
PD 406	4.26	.31	15.22	2.82	.66	3.63
Va. 1104	4.18	.28	15.47	2.91	.68	3.67
NC 1626-5C	3.64	.34	14.69	2.77	.76	4.10
Coker 62-323-24S	3.76	.28	20.86	2.49	.66	5.53
NC 717-1-2	3.31	.19	18.91	2.39	.72	5.75
PD 29	4.15	.30	15.84	2.88	.69	3.85
Reams B-1	2.98	.22	19.30	2.46	.84	6.46
Bell 60	4.03	.27	17.40	2.74	.67	4.29
Speight G-35	3.05	.34	22.24	2.40	.78	7.30
Bissette's H-0-9	2.76	.11	16.69	2.56	.93	6.05
L.S.D. (.05)	.37	.15	2.71	.17	.07	1.09
(.01)	.49	.20	3.59	.23	.09	1.44
C. V. (%)	6	40	10	4	6	14

Table 7. Continued. TV 140 Rocky Mount - 1963.

Varieties or lines	% Total Nitrogen Soluble	Alpha Amino Nitrogen	Water Soluble Acids	pH
	Commercially Available Varieties			
Hicks Broadleaf	67.90	.257	4.95	5.30
NC 95	64.57	.185	4.86	5.27
Reams 266	64.53	.224	4.55	5.38
Coker 319	64.90	.279	4.86	5.30
Speight G-3	65.70	.212	4.83	5.29
Bell 29	64.03	.242	4.64	5.30
McNair 30	63.90	.207	4.65	5.32
McNair 12	66.27	.256	5.01	5.28
Speight G-10	64.67	.195	4.66	5.23
Coker 187-Hicks	63.43	.235	4.47	5.31
Speight G-19	66.93	.229	4.87	5.33
Speight G-5	64.30	.223	4.48	5.32
McNair 20	66.77	.245	4.88	5.28
	Advanced Breeding Lines			
NC 717-1-1	63.63	.219	4.39	5.32
Speight G-36	66.40	.303	4.94	5.30
NC 2512C	64.03	.199	4.21	5.42
PD 32	63.10	.245	4.69	5.25
NC TG-2	64.40	.185	4.67	5.30
NC 2570C	63.73	.225	4.71	5.34
Coker 62-297-98S	66.30	.222	4.72	5.31
NC 2316C	66.20	.219	5.03	5.28
NC 2320C	66.37	.220	5.06	5.25
NC 2514C	67.03	.187	4.41	5.42
PD 48	65.87	.267	4.89	5.24
Reams A-6	60.93	.186	3.95	5.40
Speight G-8	62.53	.236	4.24	5.35
Coker 62-213-27S	62.43	.231	4.23	5.36
Reams D-10	62.40	.233	3.87	5.32
Speight G-20	65.13	.238	4.15	5.27
Coker 62-247-48S	67.00	.232	4.69	5.30
PD 690	66.17	.308	4.88	5.23
Va. 187	65.60	.221	4.62	5.28
NC 2543C	66.07	.281	4.50	5.36
NC 744-21	63.07	.173	4.13	5.33
NC 2519C	66.47	.255	4.57	5.33
Bell 52	61.17	.225	4.10	5.40
McNair 151	66.57	.170	4.95	5.16
NC 2326C	67.30	.222	4.73	5.36
NC TG-4	66.30	.225	5.00	5.24
PD 406	66.03	.248	5.23	5.30
Va. 1104	66.33	.231	4.83	5.40
NC 1626-5C	65.63	.275	4.75	5.35
Coker 62-323-24S	65.27	.194	4.78	5.20
NC 717-1-2	60.87	.161	4.21	5.28
PD 29	66.97	.272	5.10	5.27
Reams B-1	62.57	.219	4.16	5.31
Bell 60	64.83	.193	4.97	5.25
Speight G-35	65.77	.169	4.39	5.30
Bissette's H-0-9	62.67	.269	4.23	5.30
L.S.D. (.05)	2.25	.061	.29	.08
(.01)	2.98	.080	.39	.11
C. V. (%)	2	16	4	1

Table 8. Comparison of varieties for certain characteristics - TV 139 Clayton - 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	1603	1074	66.76	3.2	42	15.2	32	1.7	3.0	3.6
NC 95	1908	1161	60.89	4.0	50	17.6	39	1.7	2.4	2.5
Reams 266	1873	1118	59.71	3.7	52	19.0	43	1.7	2.7	2.3
Coker 319	1755	1076	61.31	4.0	49	16.9	34	1.6	2.3	2.4
Speight G-3	1953	1186	60.73	3.6	50	17.7	40	1.7	2.3	2.7
Bell 29	1908	1173	61.49	3.9	48	15.7	40	2.0	3.1	3.1
McNair 30	1822	1148	62.64	3.9	47	15.2	35	1.6	2.4	3.2
McNair 12	1885	1167	62.02	3.6	47	15.9	34	1.6	2.5	2.4
Speight G-10	1947	1217	62.62	3.7	48	17.1	36	1.8	2.1	2.5
Coker 187-Hicks	1860	1164	62.53	3.8	49	16.7	38	1.6	2.5	2.8
Speight G-19	1822	1088	59.59	4.0	50	18.6	36	1.5	2.2	2.2
Speight G-5	2035	1272	62.56	3.9	51	18.1	37	1.6	2.3	2.3
McNair 20	1570	990	63.07	3.6	44	15.7	31	1.6	2.3	2.5
Advanced Breeding Lines										
NC 717-1-1	2113	1197	56.52	4.2	56	21.1	48	1.6	2.5	2.5
Speight G-36	2183	1366	62.60	3.7	52	19.3	43	1.6	2.5	2.5
NC 2512C	1818	1159	63.76	3.5	46	15.2	36	1.7	2.6	3.0
PD 32	2040	1233	60.21	4.1	55	19.7	38	1.6	2.3	2.0
NC TG-2	1908	1102	57.68	4.2	46	14.1	33	1.6	2.4	3.7
NC 2570C	1922	1208	62.74	3.9	45	16.3	38	1.6	2.7	2.9
Coker 62-297-98S	1867	1192	63.84	3.9	52	19.0	39	1.6	2.4	2.2
NC 2316C	1435	961	67.04	3.1	42	13.8	31	1.8	2.4	3.2
NC 2320C	1342	832	62.04	3.6	41	11.5	29	1.6	3.3	4.1
NC 2514C	1703	1079	63.42	3.7	46	15.1	35	1.6	2.2	3.4
PD 48	1727	1083	62.57	3.4	46	15.7	37	1.6	2.7	3.2
Reams A-6	2238	1305	58.28	4.6	57	21.9	41	1.6	2.1	2.0
Speight G-8	1790	929	51.85	4.4	47	15.9	38	1.6	2.7	3.2
Coker 62-213-27S	1995	1241	62.20	4.1	52	18.6	39	1.7	2.3	2.4
Reams D-10	2263	1294	57.49	4.5	62	20.1	46	1.8	2.8	2.4
Speight G-20	2223	1395	62.73	3.9	52	19.8	40	1.6	2.4	2.2
Coker 62-247-48S	1848	1107	59.42	3.8	54	17.9	41	1.8	2.6	2.4
PD 690	1978	1128	57.11	4.1	54	18.6	50	1.8	2.8	3.2
Va. 187	1888	1243	65.71	3.6	45	15.3	32	1.6	2.5	2.8
NC 2543C	1940	1124	57.95	4.0	49	16.5	38	1.8	2.8	2.8
NC 744-21	2003	1171	58.71	4.3	52	19.4	40	1.7	2.4	2.2
NC 2519C	1575	958	60.81	4.0	45	15.6	34	1.5	2.3	2.9
Bell 52	2047	1251	61.15	4.3	61	22.5	47	1.6	2.3	2.3
McNair 151	1877	1203	64.14	3.8	51	15.6	34	1.6	2.5	2.6
NC 2326C	1712	1154	67.51	3.4	43	13.8	34	1.6	2.6	4.3
NC TG-4	1908	1221	64.02	3.8	48	16.4	35	1.5	2.4	2.5
PD 406	1832	1077	58.67	3.9	49	15.5	39	1.8	2.6	3.1
Va. 1104	1923	1201	62.48	3.8	50	16.4	42	1.7	2.6	3.1
NC 1626-5C	1867	1202	64.35	3.6	47	15.0	40	1.6	2.8	3.2
Coker 62-323-24S	2223	1342	60.45	3.7	57	17.2	39	1.7	2.6	2.5
NC 717-1-2	2202	1048	47.67	4.4	58	21.7	44	1.6	2.5	2.2
PD 29	1788	1107	62.02	3.6	46	14.7	35	1.8	2.7	3.0
Reams B-1	2165	1266	58.43	4.6	54	19.7	45	1.8	2.7	2.5
Bell 60	1757	1176	67.00	3.5	43	15.2	35	1.6	2.6	3.3
Speight G-35	2245	1356	60.32	4.1	61	21.8	47	1.8	2.5	2.3
Bissette's H-0-9	1955	1208	61.71	4.3	52	17.0	36	1.7	2.6	2.5
L.S.D. (.05)	240	177	4.40	.4	3	2.2	5	.4	.4	.7
(.01)	319	235	5.84	.6	5	2.9	6	.5	.5	.9
C. V. (%)	8	9	4	7	4	8	7	10	10	6

Table 8. Continued. TV 139 Clayton - 1963.

Varieties or lines	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	2.5	24.3	10.2	11.1	10.4	23.5	22.4	20.9
NC 95	2.6	23.0	8.7	11.4	12.1	17.4	21.3	20.8
Reams 266	3.6	22.0	8.2	12.7	13.5	17.8	22.5	22.3
Coker 319	1.8	24.4	7.7	10.9	10.8	18.3	22.2	20.7
Speight G-3	1.2	26.0	8.4	11.8	13.5	17.5	21.4	21.8
Bell 29	1.5	21.2	8.5	12.5	13.9	19.0	23.5	22.9
McNair 30	1.5	21.7	9.8	12.1	12.1	22.3	25.0	22.9
McNair 12	1.7	20.8	9.0	11.5	12.0	20.3	22.5	20.9
Speight G-10	.5	19.9	6.9	9.9	10.9	17.7	22.0	22.7
Coker 187-Hicks	3.7	23.0	8.9	12.1	12.2	18.4	21.3	20.5
Speight G-19	2.6	24.1	7.9	11.6	12.4	18.8	22.7	22.1
Speight G-5	1.3	26.4	7.3	11.3	13.1	16.1	22.1	22.7
McNair 20	1.7	21.4	9.8	11.3	11.1	22.1	23.7	20.9
Advanced Breeding Lines								
NC 717-1-1	3.7	23.1	6.5	9.5	12.7	13.7	19.2	21.7
Speight G-36	2.0	24.2	7.1	10.5	12.0	17.1	21.9	22.1
NC 2512C	1.8	22.6	9.9	10.6	10.0	20.4	22.1	20.1
PD 32	2.3	22.5	7.6	12.3	13.5	17.5	21.9	21.9
NC TG-2	1.0	23.8	9.2	12.2	12.1	20.9	22.7	20.6
NC 2570C	3.9	25.3	9.7	12.1	12.3	19.4	21.9	20.8
Coker 62-297-98S	1.2	22.0	7.3	10.5	13.1	17.3	21.6	22.4
NC 2316C	3.1	21.9	9.1	10.2	9.4	21.7	21.3	18.9
NC 2320C	2.4	23.0	10.0	10.1	9.5	22.9	20.3	18.7
NC 2514C	1.8	24.6	9.7	10.9	9.7	22.0	24.7	21.0
PD 48	1.5	17.4	8.1	11.1	11.3	19.5	23.1	21.5
Reams A-6	.5	25.4	7.2	9.9	13.1	15.9	19.5	22.4
Speight G-8	3.8	28.1	7.5	10.6	11.7	16.2	20.1	20.6
Coker 62-213-27S	3.7	26.5	7.1	10.9	12.7	16.5	20.9	22.1
Reams D-10	1.6	26.0	6.5	10.0	13.0	14.6	19.0	21.6
Speight G-20	1.5	24.5	6.9	10.1	11.9	17.7	22.4	23.6
Coker 62-247-48S	3.4	26.3	8.3	11.5	12.3	17.4	21.3	21.2
PD 690	2.1	22.9	7.9	12.3	14.5	15.4	20.7	21.2
Va. 187	1.7	18.7	8.9	10.9	10.7	19.6	21.8	21.1
NC 2543C	2.1	22.2	9.1	11.5	12.3	19.0	24.2	23.5
NC 744-21	.9	21.9	7.7	11.9	14.2	17.9	22.8	23.8
NC 2519C	2.9	20.7	9.0	10.6	10.2	19.5	21.4	19.8
Bell 52	3.8	24.4	8.3	11.2	12.9	17.6	21.3	21.6
McNair 151	.9	22.1	8.2	10.7	11.5	19.9	23.7	22.3
NC 2326C	.8	21.3	9.7	11.2	11.0	21.7	22.9	20.9
NC TG-4	3.2	26.5	8.2	10.6	10.5	20.2	23.1	20.6
PD 406	2.5	25.3	8.4	11.3	11.7	18.9	22.2	20.2
Va. 1104	1.1	20.2	9.5	14.5	14.7	19.7	24.4	23.0
NC 1626-5C	1.2	23.8	9.2	12.1	12.2	18.8	22.5	20.5
Coker 62-323-24S	.7	19.0	7.2	10.1	12.5	15.7	20.3	23.1
NC 717-1-2	3.4	25.5	6.5	9.5	12.1	15.7	20.5	23.3
PD 29	2.6	19.6	8.3	10.8	11.5	18.9	21.6	20.6
Reams B-1	3.2	27.6	8.3	11.5	12.8	17.1	21.0	22.9
Bell 60	1.8	20.2	9.4	12.0	11.6	19.3	21.9	21.0
Speight G-35	2.9	22.6	5.3	7.6	11.0	14.5	17.7	21.1
Bissette's H-0-9	2.4	24.9	7.9	11.4	12.7	16.7	21.4	22.1
L.S.D. (.05)	.8	3.9	1.5	1.4	1.1	2.3	2.1	2.1
(.01)	1.0	5.2	1.9	1.9	1.5	3.0	2.8	2.7
C. V. (%)	22	10	11	8	6	8	6	6

Table 8. Continued. TV 139 Clayton - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios	
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties						
Hicks Broadleaf	5.21	.25	20.43	2.73	.52	4.02
NC 95	4.50	.19	20.96	2.62	.58	4.66
Reams 266	3.62	.31	23.59	2.40	.65	6.57
Coker 319	4.08	.22	20.37	2.66	.65	5.00
Speight G-3	3.87	.22	24.22	2.28	.60	6.35
Bell 29	3.99	.28	21.45	2.55	.64	5.37
McNair 30	4.61	.14	23.06	2.51	.55	5.02
McNair 12	3.83	.34	23.82	2.56	.66	6.51
Speight G-10	4.18	.29	25.21	2.38	.58	6.14
Coker 187-Hicks	3.77	.27	20.71	2.52	.67	5.60
Speight G-19	4.63	.25	23.20	2.59	.55	5.04
Speight G-5	4.24	.17	20.94	2.54	.60	5.03
McNair 20	4.87	.20	22.75	2.69	.55	4.70
Advanced Breeding Lines						
NC 717-1-1	3.78	.16	24.39	2.42	.65	6.48
Speight G-36	4.09	.24	26.09	2.47	.60	6.40
NC 2512C	4.29	.20	22.40	2.44	.57	5.19
PD 32	4.11	.21	23.38	2.54	.61	5.81
NC TG-2	5.09	.35	20.33	2.76	.54	4.04
NC 2570C	3.38	.28	23.54	2.54	.92	8.66
Coker 62-297-98S	4.28	.20	21.35	2.45	.57	5.05
NC 2316C	5.40	.28	20.92	2.85	.53	3.88
NC 2320C	6.39	.28	18.03	2.81	.44	2.86
NC 2514C	4.67	.28	23.39	2.54	.54	5.02
PD 48	4.92	.17	22.47	2.68	.54	4.63
Reams A-6	2.89	.11	25.33	2.15	.74	8.76
Speight G-8	3.38	.19	24.27	2.38	.68	7.20
Coker 62-213-27S	3.17	.21	20.47	2.40	.76	6.46
Reams D-10	3.03	.22	22.36	2.36	.77	7.41
Speight G-20	3.25	.19	24.35	2.31	.72	7.70
Coker 62-247-48S	4.14	.28	23.08	2.41	.57	5.86
PD 690	3.87	.48	23.78	2.66	.68	6.16
Va. 187	4.53	.32	23.68	2.52	.54	5.37
NC 2543C	4.24	.26	22.06	2.64	.62	5.26
NC 744-21	3.34	.10	25.16	2.28	.67	7.58
NC 2519C	4.81	.23	20.71	2.72	.56	4.39
Bell 52	2.73	.26	22.85	2.31	.84	8.42
McNair 151	4.03	.18	23.57	2.49	.62	5.94
NC 2326C	4.55	.28	23.21	2.54	.56	5.19
NC TG-4	4.28	.31	25.47	2.60	.60	6.00
PD 406	4.73	.16	20.41	2.67	.56	4.33
Va. 1104	4.22	.30	19.95	2.59	.61	4.82
NC 1626-5C	4.13	.25	22.31	2.63	.61	5.39
Coker 62-323-24S	4.08	.19	22.89	2.37	.58	5.61
NC 717-1-2	3.89	.16	22.82	2.42	.63	5.87
PD 29	4.86	.26	23.57	2.66	.54	4.89
Reams B-1	2.86	.16	26.64	2.30	.80	9.38
Bell 60	4.70	.26	23.61	2.54	.54	5.04
Speight G-35	2.64	.14	29.79	2.02	.74	11.37
Bissette's H-0-9	2.66	.29	23.54	2.30	.85	8.93
L.S.D. (.05)	.73	.12	3.56	.29	.14	1.96
(.01)	.97	.16	4.73	.39	.18	2.60
C. V. (%)	11	31	10	7	14	20

Table 9. Comparison of varieties for certain characteristics - TV 141 Oxford - 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	2273	1301	57.75	2.4	52	16.3	38	1.7	2.1	3.2
NC 95	2282	1268	55.63	2.8	59	17.6	40	1.8	2.4	2.6
Reams 266	2494	1414	56.52	3.3	59	17.8	42	1.8	2.5	2.8
Coker 319	2213	1338	60.39	2.8	57	17.9	39	1.7	2.1	2.8
Speight G-3	2515	1347	53.46	3.9	58	16.8	41	1.8	2.3	3.0
Bell 29	2503	1354	54.40	3.2	57	17.3	42	1.7	2.3	3.2
McNair 30	2383	1370	57.47	2.7	55	18.1	42	1.6	2.5	2.9
McNair 12	2145	1242	57.64	3.1	57	17.3	40	1.8	2.2	2.8
Speight G-10	2548	1437	56.64	3.5	57	19.7	41	1.7	2.1	2.3
Coker 187-Hicks	2601	1542	59.26	3.2	58	17.3	44	1.9	2.6	2.9
Speight G-19	2302	1241	54.12	4.1	58	18.7	41	1.6	2.1	2.7
Speight G-5	2426	1356	56.21	3.5	58	18.1	42	1.8	2.2	2.9
McNair 20	2120	1280	60.42	2.0	55	17.3	40	1.7	2.2	2.9
Advanced Breeding Lines										
NC 717-1-1	2692	1477	55.03	3.5	59	18.8	46	1.8	2.3	3.0
Speight G-36	2476	1387	56.17	3.1	59	18.4	44	1.8	2.3	2.8
NC 2512C	2512	1387	54.57	3.9	57	18.4	42	1.7	2.3	2.9
PD 32	2375	1298	54.55	3.8	58	18.7	38	1.7	2.0	2.3
NC TG-2	2637	1460	55.39	3.2	56	18.5	40	1.7	2.0	2.7
NC 2570C	2440	1319	54.29	3.6	56	17.7	43	1.8	2.4	2.9
Coker 62-297-98S	2530	1384	54.03	3.9	58	18.5	44	1.7	2.2	2.9
NC 2316C	2204	1371	62.34	1.4	50	17.4	39	1.6	2.2	2.9
NC 2320C	2270	1364	60.09	1.7	52	15.5	37	1.8	2.3	3.0
NC 2514C	2641	1486	56.53	3.0	56	17.5	42	1.8	2.2	3.0
PD 48	2224	1287	57.87	3.3	57	18.2	42	1.7	2.4	2.6
Reams A-6	2687	1462	54.68	3.1	58	19.4	44	1.7	2.1	2.6
Speight G-8	2293	976	42.28	4.5	56	17.8	45	1.8	2.3	3.2
Coker 62-213-27S	2464	1485	59.70	3.5	57	17.9	44	1.7	2.4	2.9
Reams D-10	2405	1374	56.86	3.5	59	18.3	46	1.8	2.3	3.1
Speight G-20	2608	1411	54.56	3.3	58	18.6	42	1.7	2.2	2.7
Coker 62-247-48S	2486	1375	55.42	3.7	58	18.8	43	1.7	2.3	2.6
PD 690	2330	1156	49.79	4.1	58	16.3	47	1.9	3.0	3.4
Va. 187	2659	1576	59.52	2.9	56	18.7	40	1.7	2.0	2.6
NC 2543C	2520	1377	54.84	3.4	59	16.9	43	1.7	2.3	3.3
NC 744-21	2656	1431	54.05	3.8	59	18.7	44	1.7	2.5	2.9
NC 2519C	2476	1390	56.14	2.8	56	17.9	42	1.8	2.1	2.9
Bell 52	2593	1529	59.01	3.6	61	19.3	47	1.8	2.4	2.8
McNair 151	2487	1372	55.21	4.1	57	16.8	36	1.6	2.1	2.7
NC 2326C	2397	1509	63.34	1.4	55	16.9	42	1.6	2.3	3.3
NC TG-4	2323	1162	50.35	4.0	58	18.8	42	1.7	2.2	2.7
PD 406	2159	1208	55.22	3.0	58	17.5	42	1.8	2.3	2.8
Va. 1104	2426	1223	50.43	4.1	57	17.2	43	1.8	2.4	3.2
NC 1626-5C	2399	1336	55.43	2.5	57	17.4	43	1.6	2.4	3.2
Coker 62-323-24S	2895	1621	55.89	3.3	59	19.1	41	1.7	2.1	2.5
NC 717-1-2	2637	1356	51.43	3.7	59	18.5	45	1.8	2.3	2.9
PD 29	2273	1193	52.21	3.8	56	17.7	43	1.9	2.2	2.9
Reams B-1	2522	1396	54.90	3.3	58	18.6	48	1.8	2.6	3.0
Bell 60	2124	1230	57.78	3.0	55	17.7	40	1.7	2.1	2.9
Speight G-35	2789	1382	49.48	4.2	60	18.9	44	1.7	2.3	2.9
Bissette's H-0-9	2400	1370	56.93	3.5	58	18.4	41	1.7	2.1	2.7
L.S.D. (.05)	166	139	3.74	.5	1	1.1	3	.2	.3	.4
(.01)	220	184	4.97	.7	2	1.4	4	.3	.4	.5
C. V. (%)	4	6	4	9	2	4	4	7	8	8

Table 9. Continued. TV 141 Oxford - 1963

Varieties or lines	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	2.3	21.7	9.6	12.0	12.2	21.5	22.2	20.6
NC 95	1.6	16.3	9.3	12.3	14.9	20.2	21.7	21.3
Reams 266	3.3	15.8	9.9	12.8	15.3	19.4	21.3	21.1
Coker 319	1.2	16.6	9.1	11.4	14.2	21.7	23.5	22.5
Speight G-3	.2	17.7	9.9	13.7	15.2	20.4	23.4	23.0
Bell 29	.4	14.3	9.4	13.1	14.5	20.4	23.3	22.0
McNair 30	2.2	20.6	8.5	11.6	14.9	21.3	23.1	23.1
McNair 12	.6	15.7	10.1	12.2	14.8	19.4	21.6	22.2
Speight G-10	.1	15.0	7.6	10.1	12.5	20.0	22.5	23.8
Coker 187-Hicks	5.2	17.8	10.3	13.3	15.7	20.9	22.3	22.2
Speight G-19	3.4	21.3	8.0	10.9	14.4	20.6	23.4	22.9
Speight G-5	.1	13.6	9.5	12.3	14.8	20.2	22.5	22.7
McNair 20	.4	18.5	8.0	11.0	13.9	20.2	21.9	22.3
Advanced Breeding Lines								
NC 717-1-1	5.6	11.5	9.3	12.0	15.3	18.9	21.9	22.3
Speight G-36	.4	12.5	8.5	11.3	13.6	18.5	21.1	20.9
NC 2512C	.7	17.0	8.1	10.5	14.2	19.7	22.2	22.3
PD 32	.5	15.6	8.3	11.6	15.0	18.7	21.9	21.4
NC TG-2	.0	13.1	8.3	11.0	14.8	20.7	22.5	22.7
NC 2570C	3.1	17.6	9.5	13.3	15.4	20.1	23.5	22.5
Coker 62-297-98S	.2	14.0	9.5	12.0	15.5	20.4	21.7	22.5
NC 2316C	1.3	22.5	8.3	12.1	13.1	20.7	22.2	21.1
NC 2320C	1.4	20.6	9.3	12.6	12.8	22.7	23.3	21.5
NC 2514C	1.8	16.9	7.5	10.7	13.1	20.9	22.9	22.5
PD 48	.3	11.8	8.1	11.9	14.5	20.7	22.8	22.2
Reams A-6	.1	15.8	8.2	10.7	15.3	18.4	20.8	21.1
Speight G-8	5.0	19.5	9.6	12.8	14.1	20.6	22.1	20.6
Coker 62-213-27S	5.7	16.2	9.6	12.4	16.1	20.3	22.2	22.8
Reams D-10	.4	15.3	9.1	12.1	15.6	19.7	22.0	21.8
Speight G-20	.2	14.3	7.3	10.2	14.2	18.8	21.9	23.2
Coker 62-247-48S	5.2	19.6	9.4	12.0	13.8	19.8	22.3	20.4
PD 690	1.0	14.0	10.6	15.9	16.4	18.9	22.7	22.4
Va. 187	.0	14.1	7.9	11.4	13.6	19.9	22.6	22.7
NC 2543C	1.5	12.8	9.1	12.6	15.2	20.1	22.2	21.6
NC 744-21	.4	10.7	9.3	13.1	15.4	20.7	22.9	22.5
NC 2519C	2.5	17.6	7.5	11.3	13.5	19.7	21.9	22.5
Bell 52	4.8	14.3	8.8	11.4	15.2	18.4	21.2	22.3
McNair 151	.0	15.8	9.1	13.4	13.2	22.9	25.2	22.6
NC 2326C	.0	17.0	9.9	13.6	13.4	23.2	22.9	20.8
NC TG-4	2.7	16.5	7.7	11.3	14.8	21.5	23.5	23.0
PD 406	2.3	16.3	8.9	12.7	13.4	20.3	21.9	21.0
Va. 1104	.3	12.9	10.5	14.7	17.1	22.4	24.7	23.2
NC 1626-5C	.1	13.6	9.5	12.3	14.6	19.1	21.7	21.3
Coker 62-323-24S	.1	12.1	7.3	10.1	14.2	19.8	22.3	22.7
NC 717-1-2	3.2	12.9	8.5	11.8	14.3	19.5	22.3	22.3
PD 29	.5	15.3	8.4	12.4	13.8	19.5	22.3	22.1
Reams B-1	4.4	18.3	10.1	12.2	15.9	19.7	22.6	23.1
Bell 60	.5	17.7	8.1	10.8	13.4	21.1	22.9	22.5
Speight G-35	.3	12.3	7.7	10.9	13.8	18.4	22.1	22.7
Bissette's H-0-9	2.7	19.7	9.5	11.9	15.1	18.8	22.0	22.7
L.S.D. (.05)	1.1	2.8	1.0	1.3	1.3	1.6	1.5	1.4
(.01)	1.4	3.7	1.3	1.7	1.8	2.1	1.9	1.8
C. V. (%)	41	11	7	7		5	4	4

Table 9. Continued. TV 141 Oxford - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios	
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N %	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties						
Hicks Broadleaf	3.26	.22	29.10	2.03	.63	9.00
NC 95	3.21	.16	25.10	2.13	.66	8.06
Reams 266	2.71	.20	27.25	2.03	.74	9.92
Coker 319	3.08	.25	24.30	2.35	.76	8.04
Speight G-3	2.98	.08	28.64	1.96	.66	9.99
Bell 29	2.82	.21	24.79	2.17	.76	8.80
McNair 30	3.13	.15	27.36	2.04	.65	9.01
McNair 12	2.90	.21	23.11	2.22	.76	8.18
Speight G-10	3.34	.21	26.52	2.17	.66	7.98
Coker 187-Hicks	2.46	.13	28.09	1.96	.78	11.22
Speight G-19	3.31	.10	27.84	2.15	.64	8.42
Speight G-5	2.53	.12	27.15	1.90	.75	10.91
McNair 20	3.26	.22	26.05	2.09	.64	8.05
Advanced Breeding Lines						
NC 717-1-1	2.54	.14	29.28	1.91	.77	12.29
Speight G-36	3.25	.09	25.12	2.03	.63	8.02
NC 2512C	2.94	.14	25.06	2.22	.75	8.71
PD 32	3.13	.14	27.66	2.15	.68	8.93
NC TG-2	3.09	.12	27.99	2.04	.66	9.08
NC 2570C	2.80	.19	28.24	2.05	.72	10.07
Coker 62-297-98S	3.37	.17	22.28	2.13	.62	6.47
NC 2316C	3.24	.15	27.91	2.07	.65	8.74
NC 2320C	3.40	.24	26.97	2.05	.61	8.00
NC 2514C	2.90	.09	29.52	1.97	.68	10.47
PD 48	3.04	.26	25.53	2.25	.74	8.57
Reams A-6	2.19	.11	28.01	1.79	.84	13.30
Speight G-8	2.48	.17	24.44	2.09	.85	10.22
Coker 62-213-27S	2.08	.18	28.73	1.90	.91	13.76
Reams D-10	2.33	.12	26.48	2.11	.87	10.43
Speight G-20	2.58	.11	27.93	2.03	.78	10.61
Coker 62-247-48S	3.09	.21	30.01	2.07	.66	9.66
PD 690	3.20	.48	23.65	2.36	.72	7.05
Va. 187	3.11	.20	26.87	2.09	.67	8.44
NC 2543C	2.80	.15	26.55	2.08	.74	9.51
NC 744-21	2.52	.07	29.04	1.78	.70	11.56
NC 2519C	3.17	.16	27.39	2.07	.65	8.75
Bell 52	2.03	.11	26.87	2.00	.98	13.25
McNair 151	3.28	.12	28.00	2.06	.63	8.73
NC 2326C	3.24	.22	27.78	2.09	.65	8.63
NC TG-4	2.95	.13	23.28	2.11	.72	7.83
PD 406	3.62	.16	25.77	2.19	.60	7.10
Va. 1104	2.99	.18	23.97	2.19	.74	8.27
NC 1626-5C	2.60	.17	27.53	2.01	.76	10.31
Coker 62-323-24S	2.86	.20	27.67	1.88	.66	10.05
NC 717-1-2	2.30	.11	28.76	1.76	.79	12.95
PD 29	3.26	.16	24.31	2.12	.65	7.56
Reams B-1	2.34	.14	28.74	2.00	.84	11.85
Bell 60	3.42	.24	25.13	2.26	.66	7.47
Speight G-35	2.17	.10	30.28	1.80	.82	13.86
Bissette's H-0-9	2.26	.18	24.58	2.03	.89	10.69
L.S.D. (.05)	.37	.10	3.13	.17	.66	1.78
(.01)	.50	.14	4.16	.22	.87	2.36
C. V. (%)	8	38	7	5	6	11

Table 9. Continued. TV 141 Oxford - 1963.

Varieties or lines	% Total Nitrogen Soluble	Alpha Amino Nitrogen	Water Soluble Acids	pH
	Commercially Available Varieties			
Hicks Broadleaf	62.73	.116	4.13	4.96
NC 95	62.30	.130	4.40	4.98
Reams 266	59.90	.137	3.75	5.03
Coker 319	58.73	.167	4.26	4.89
Speight G-3	59.43	.113	3.86	4.99
Bell 29	60.03	.157	4.14	5.02
McNair 30	62.00	.127	3.96	5.04
McNair 12	59.70	.154	4.11	5.02
Speight G-10	62.17	.139	4.08	4.87
Coker 187-Hicks	57.50	.129	3.89	4.91
Speight G-19	60.77	.131	4.27	4.96
Speight G-5	56.87	.117	3.78	4.96
McNair 20	62.47	.126	4.28	4.93
	Advanced Breeding Lines			
NC 717-1-1	59.17	.117	3.72	5.05
Speight G-36	59.87	.134	3.98	4.90
NC 2512C	60.50	.175	4.09	5.03
PD 32	59.10	.122	4.15	4.91
NC TG-2	60.33	.122	4.04	4.93
NC 2570C	61.33	.129	4.06	5.05
Coker 62-297-98S	62.97	.112	4.33	4.95
NC 2316C	63.37	.128	4.10	5.00
NC 2320C	60.47	.113	4.25	4.89
NC 2514C	59.40	.112	3.84	5.06
PD 48	59.90	.150	4.22	4.95
Reams A-6	56.43	.120	3.38	5.02
Speight G-8	57.53	.127	3.98	4.99
Coker 62-213-27S	55.50	.116	3.67	4.94
Reams D-10	58.63	.149	3.96	4.96
Speight G-20	57.60	.120	3.85	4.95
Coker 62-247-48S	62.63	.106	4.07	4.99
PD 690	63.93	.164	4.34	4.95
Va. 187	61.83	.112	4.05	4.99
NC 2543C	60.73	.126	3.83	5.05
NC 744-21	57.97	.105	3.60	4.98
NC 2519C	60.60	.126	3.98	5.03
Bell 52	57.77	.119	3.62	4.94
McNair 151	61.70	.113	4.16	4.92
NC 2326C	62.80	.130	4.00	4.99
NC TG-4	61.30	.143	4.13	4.91
PD 406	61.93	.138	4.51	4.95
Va. 1104	60.90	.153	4.20	5.07
NC 1626-5C	59.07	.120	4.02	5.06
Coker 62-323-24S	60.23	.105	4.08	4.96
NC 717-1-2	55.67	.099	3.29	4.96
PD 29	61.17	.149	4.23	4.93
Reams B-1	58.30	.125	3.66	5.02
Bell 60	62.60	.138	4.24	5.01
Speight G-35	58.80	.111	3.56	5.01
Bissette's H-0-9	57.20	.156	3.87	4.99
L.S.D. (.05)	2.75	.082	.34	.09
(.01)	3.64	.109	.45	.12
C. V. (%)	3	12	6	1

Table 10. Comparison of varieties for certain characteristics - TV 142 Reidsville - 1963.

Varieties or lines	Yield Lbs/A	Value Index Dol/A	Value Index Dol/Cwt.	QI	Days to Flower	Leaves per Plant	Height of Plant	Internode Length 0-10"	Internode Length 10-20"	Internode Length 20"-top
Commercially Available Varieties										
Hicks Broadleaf	2115	997	48.07	4.0	43	17.0	41	1.7	2.3	3.3
NC 95	2401	1327	52.92	3.7	48	20.1	43	1.7	2.4	2.3
Reams 266	2619	1406	53.61	3.7	51	22.3	48	1.7	2.7	2.3
Coker 319	2528	1289	49.79	3.8	50	20.1	40	1.6	2.1	2.3
Speight G-3	2550	1232	48.47	4.1	50	20.0	46	1.6	2.3	2.7
Bell 29	2746	1078	42.09	4.2	51	19.5	49	1.7	2.5	3.0
McNair 30	2435	1163	48.01	3.8	46	16.4	40	1.6	2.4	3.3
McNair 12	2405	1376	57.48	3.4	47	19.7	39	1.6	2.4	2.0
Speight G-10	2290	1197	49.75	4.0	49	19.7	41	1.7	2.4	2.2
Coker 187-Hicks	2611	1502	55.88	3.5	52	21.5	45	1.7	2.4	2.2
Speight G-19	2543	1322	53.08	3.9	50	22.1	42	1.5	2.1	2.0
Speight G-5	2705	1456	52.25	3.7	53	19.7	43	1.6	2.4	2.4
McNair 20	2200	967	45.82	4.0	47	18.6	41	1.6	2.3	2.6
Advanced Breeding Lines										
NC 717-1-1	3078	1540	48.73	3.7	55	24.4	53	1.6	2.6	2.3
Speight G-36	2634	1106	41.15	4.2	56	21.6	48	1.7	2.3	2.6
NC 2512C	2362	1394	55.12	3.6	48	18.7	42	1.7	2.2	2.6
PD 32	2798	1233	46.33	4.2	51	20.6	41	1.6	2.0	2.3
NC TG-2	2374	897	39.95	4.4	47	18.3	38	1.6	2.1	2.6
NC 2570C	2516	1087	45.04	4.0	45	17.7	42	1.8	2.5	2.8
Coker 62-297-98S	2663	1206	46.93	4.1	53	21.3	46	1.6	2.3	2.3
NC 2316C	1926	1024	55.30	3.5	45	15.8	38	1.7	2.6	3.0
NC 2320C	1982	1060	56.91	3.8	43	15.4	37	1.6	2.6	3.4
NC 2514C	2287	1223	54.01	3.8	45	18.1	39	1.6	2.3	2.5
PD 48	2400	1236	52.22	4.0	46	18.0	44	1.7	2.6	2.9
Reams A-6	3165	1896	60.46	3.4	53	22.3	45	1.7	2.2	2.2
Speight G-8	2485	986	41.43	4.0	49	19.6	46	1.7	2.7	2.7
Coker 62-213-27S	2699	1639	58.63	3.4	54	21.0	46	1.7	2.4	2.3
Reams D-10	2977	1767	57.52	3.5	63	25.9	57	1.7	2.5	2.3
Speight G-20	2753	1422	51.71	3.9	51	22.1	45	1.6	2.4	2.2
Coker 62-247-48S	2582	1500	56.12	3.6	54	22.0	48	1.7	2.5	2.3
PD 690	2683	1172	43.52	4.0	54	21.3	54	1.7	2.7	2.9
Va. 187	2502	1395	57.13	3.5	45	17.7	37	1.6	2.3	2.4
NC 2543C	2580	1056	37.57	4.1	52	19.6	48	1.7	2.6	2.9
NC 744-21	3273	1715	52.63	3.5	55	23.9	50	1.7	2.3	2.3
NC 2519C	2367	951	40.87	4.1	49	17.2	40	1.6	2.2	3.0
Bell 52	2987	1683	56.25	3.4	64	25.2	54	1.6	2.2	2.3
McNair 151	2348	1231	54.37	3.8	48	19.0	38	1.6	2.2	2.1
NC 2326C	2118	1069	49.77	3.6	44	16.7	40	1.7	2.3	3.2
NC TG-4	2628	1247	48.00	3.9	46	19.7	45	1.7	2.3	2.7
PD 406	2255	1083	44.02	4.2	49	20.5	44	1.7	2.3	2.2
Va. 1104	2388	1061	42.80	4.2	50	19.8	42	1.7	2.3	2.3
NC 1626-5C	2346	1069	47.52	4.1	46	18.7	44	1.7	2.4	2.7
Coker 62-323-24S	2764	1529	53.12	3.8	53	20.6	40	1.6	2.2	2.0
NC 717-1-2	2989	1468	49.59	4.0	59	23.7	50	1.6	2.5	2.3
PD 29	2345	1266	52.72	3.7	47	20.3	45	1.7	2.3	2.6
Reams B-1	3003	1650	54.39	3.2	55	23.1	53	1.6	2.6	2.5
Bell 60	2441	1235	51.51	3.7	45	19.3	44	1.6	2.3	2.7
Speight G-35	3497	2142	62.95	3.3	61	25.5	53	1.6	2.2	2.2
Bissette's H-0-9	2768	1522	54.85	3.5	54	21.5	46	1.7	2.3	2.4
L.S.D. (.05)	359	329	8.86	.4	4	2.3	5	.1	.3	.4
(.01)	477	437	11.77	.6	5	3.0	6	1	.4	.5
C. V. (%)	9		11	7	5	7	6	4	8	10

Table 10. Continued. TV 142 Reidsville - 1963.

Varieties or lines	Suckers per plant		Width of leaf (in.)			Length of leaf (in.)		
	Ground	Leaf Axil	5th	10th	15th	5th	10th	15th
Commercially Available Varieties								
Hicks Broadleaf	3.8	34.0	10.3	13.0	12.6	25.5	26.1	24.2
NC 95	3.4	28.2	9.3	11.1	12.6	19.4	22.4	22.2
Reams 266	4.6	32.3	8.7	11.3	14.8	19.4	23.3	23.7
Coker 319	3.0	35.5	8.7	10.6	12.2	20.9	24.0	23.1
Speight G-3	1.3	34.0	8.5	11.9	14.9	19.7	24.0	24.2
Bell 29	2.2	28.5	8.0	11.9	15.0	20.5	24.3	23.8
McNair 30	3.0	27.5	8.9	12.1	11.9	22.0	24.4	22.4
McNair 12	2.0	29.9	9.4	11.4	11.8	21.3	22.9	21.4
Speight G-10	2.1	28.0	7.9	9.6	10.8	19.3	22.7	22.5
Coker 187-Hicks	4.2	31.6	8.5	10.7	13.3	19.2	23.1	22.6
Speight G-19	4.2	37.0	7.5	10.1	13.0	19.0	23.3	23.3
Speight G-5	1.8	29.0	8.7	11.4	13.0	20.4	23.5	22.2
McNair 20	2.7	29.6	8.3	11.7	11.7	21.9	24.9	22.9
Advanced Breeding Lines								
NC 717-1-1	4.6	31.6	8.1	9.7	13.2	17.5	21.8	22.6
Speight G-36	2.6	30.3	7.9	10.1	12.5	19.1	23.5	22.8
NC 2512C	4.1	32.0	7.1	9.6	12.2	19.0	22.9	23.1
PD 32	3.1	36.0	7.7	10.8	14.4	18.3	22.4	23.0
NC TG-2	1.3	27.7	8.3	11.2	13.5	20.8	23.7	23.4
NC 2570C	3.1	31.4	8.9	11.5	13.1	19.8	22.6	22.0
Coker 62-297-98S	2.8	30.6	7.7	10.6	13.8	19.0	23.3	23.0
NC 2316C	3.1	30.0	8.6	11.0	11.0	22.6	23.1	21.5
NC 2320C	4.3	31.9	10.9	13.2	11.4	25.2	25.5	21.9
NC 2514C	3.3	33.6	8.3	10.6	11.3	21.8	23.6	22.9
PD 48	3.1	27.6	8.9	10.5	11.4	22.3	24.0	22.6
Reams A-6	1.5	29.2	8.3	10.8	14.2	18.8	22.7	23.2
Speight G-8	4.7	36.9	8.5	11.4	13.3	19.7	23.5	23.1
Coker 62-213-27S	4.6	31.9	8.0	10.5	13.2	18.0	22.5	22.3
Reams D-10	1.5	32.2	8.4	9.2	12.9	18.7	21.3	23.7
Speight G-20	2.6	34.3	7.2	9.6	12.7	18.9	22.9	23.8
Coker 62-247-48S	5.6	30.9	8.4	10.3	13.4	18.5	22.0	23.7
PD 690	2.2	31.3	8.3	11.9	13.7	17.7	22.9	22.3
Va. 187	2.3	30.9	8.9	11.8	11.6	22.1	24.7	22.8
NC 2543C	2.8	27.3	7.8	10.5	13.1	19.0	23.7	23.6
NC 744-21	2.1	28.2	8.5	11.0	14.6	20.0	24.7	25.0
NC 2519C	3.5	32.5	7.5	10.2	12.6	19.8	23.5	22.9
Bell 52	4.6	30.9	7.0	9.6	13.7	17.3	21.7	24.3
McNair 151	1.6	30.0	7.1	9.9	11.8	18.9	23.4	22.5
NC 2326C	1.9	27.6	9.2	11.0	11.0	22.3	23.6	21.0
NC TG-4	5.2	34.4	9.0	12.2	12.6	23.0	25.6	24.3
PD 406	2.5	28.9	8.1	10.4	11.9	20.2	22.1	21.6
Va. 1104	2.0	28.2	8.6	11.9	13.6	19.3	23.8	22.6
NC 1626-5C	1.0	33.0	8.6	11.5	12.7	19.4	23.1	20.8
Coker 62-323-24S	.6	27.9	7.0	9.8	12.8	18.5	22.9	23.7
NC 717-1-2	4.3	31.8	7.6	9.3	13.1	18.3	21.8	24.4
PD 29	3.2	28.2	8.2	10.7	12.2	20.2	22.6	22.3
Reams B-1	4.2	35.8	8.6	11.1	14.5	18.2	21.9	24.2
Bell 60	2.9	30.0	9.0	11.5	12.3	22.0	23.6	22.8
Speight G-35	4.0	30.9	5.6	7.9	12.2	16.4	20.9	24.4
Bissette's H-0-9	3.9	33.6	7.9	10.0	13.5	17.8	21.8	23.7
L.S.D. (.05)	1.2	5.0	1.5	1.5	1.5	2.6	1.8	2.1
(.01)	1.6	6.6	2.0	2.0	2.0	3.4	2.4	2.8
C. V. (%)	25	10	11	9	7	8	5	6

Table 10. Continued. TV 142 Reidsville - 1963.

Varieties or lines	Analysis of Cured Leaf				Ratios	
	Nic. %	NorNic. %	Sol. Sug. %	Tot. N. %	T.N. / Nic.	Sug. / Nic.
Commercially Available Varieties						
Hicks Broadleaf	4.73	.23	11.10	2.91	.61	2.33
NC 95	4.50	.37	15.24	2.71	.60	3.39
Reams 266	4.54	.30	14.36	2.74	.60	3.22
Coker 319	4.60	.29	12.66	2.92	.63	2.76
Speight G-3	5.17	.25	13.33	2.84	.55	2.57
Bell 29	4.56	.34	11.99	2.89	.64	2.63
McNair 30	5.37	.22	12.47	3.02	.56	2.38
McNair 12	4.18	.39	16.21	2.73	.65	3.83
Speight G-10	4.90	.36	15.76	2.88	.58	3.23
Coker 187-Hicks	4.27	.26	15.46	2.69	.63	3.62
Speight G-19	5.24	.28	13.70	2.95	.56	2.62
Speight G-5	4.07	.26	13.87	2.77	.67	3.39
McNair 20	5.34	.26	13.14	3.08	.58	2.50
Advanced Breeding Lines						
NC 717-1-1	4.56	.27	16.35	2.74	.60	3.59
Speight G-36	5.05	.27	12.93	2.97	.58	2.62
NC 2512C	4.09	.26	13.72	2.63	.64	3.41
PD 32	5.02	.21	12.87	2.99	.59	2.61
NC TG-2	5.16	.30	11.14	2.87	.56	2.18
NC 2570C	4.57	.33	11.30	2.84	.62	2.49
Coker 62-297-98S	5.03	.30	14.14	2.72	.54	2.84
NC 2316C	4.49	.41	11.74	2.89	.65	2.69
NC 2320C	5.07	.32	13.10	2.96	.59	2.54
NC 2514C	4.60	.40	14.82	2.77	.60	3.19
PD 48	5.16	.28	11.54	3.19	.62	2.15
Reams A-6	3.54	.26	17.03	2.41	.68	5.00
Speight G-8	3.64	.21	14.56	2.60	.73	4.07
Coker 62-213-27S	3.85	.20	15.06	2.56	.67	3.91
Reams D-10	3.64	.27	15.33	2.54	.70	4.28
Speight G-20	4.02	.21	13.76	2.70	.68	3.45
Coker 62-247-48S	4.42	.30	17.10	2.61	.58	3.85
PD 690	4.49	.62	14.02	2.96	.65	3.08
Va. 187	4.51	.46	14.78	2.76	.61	3.31
NC 2543C	4.72	.34	11.63	2.91	.62	2.46
NC 744-21	4.09	.34	17.38	2.75	.67	4.28
NC 2519C	5.03	.32	12.86	2.98	.59	2.64
Bell 52	3.07	.22	16.54	2.38	.77	5.33
McNair 151	5.43	.39	13.26	2.90	.53	2.44
NC 2326C	5.00	.27	11.07	3.01	.60	2.26
NC TG-4	4.89	.35	13.63	2.94	.60	2.85
PD 406	4.88	.37	12.89	2.90	.59	2.71
Va. 1104	5.18	.44	12.93	3.00	.58	2.63
NC 1626-5C	4.50	.37	12.31	2.77	.61	2.79
Coker 62-323-24S	4.68	.31	14.59	2.58	.55	3.13
NC 717-1-2	4.60	.21	17.92	2.58	.56	3.89
PD 29	4.95	.35	16.60	2.83	.57	3.30
Reams B-1	3.69	.27	16.86	2.61	.70	4.58
Bell 60	4.66	.34	13.98	2.94	.63	3.08
Speight G-35	3.47	.32	22.03	2.37	.68	6.44
Bissette's H-0-9	3.10	.23	15.24	2.51	.80	4.92
L.S.D. (.05)	.55	.16	2.78	.28	.06	.87
(.01)	.72	.21	3.69	.37	.08	1.16
C. V. (%)	7	31	12	6	6	16

Table 11. Quality appraisal based on color, body and texture by certain entries. TV 138 Whiteville. 1963. 1/

Varieties or lines	COMPANY							
	A	B	C	D	E	F	G	H
Hicks	3.6	2.4	2.9	4.6	2.0	4.0	4.0	3.9
NC 95	3.7	3.3	4.3	4.0	2.3	4.0	4.0	4.3
NC TG-2	4.3	5.0	4.7	4.3	3.2	5.0	4.6	4.0
NC 2514C	4.7	4.7	4.3	4.1	2.3	4.3	4.7	4.6
PD 48	3.3	5.0	4.0	3.8	2.5	4.0	4.0	4.0
Reams A-6	3.0	4.4	4.0	3.2	2.6	4.0	3.9	5.0
Coker 62-213-27S	3.0	5.0	4.0	3.9	2.3	4.0	3.2	4.3
Reams D-10	3.5	5.0	4.0	3.1	2.3	4.0	4.0	5.0
Coker 62-247-48S	4.4	5.0	4.0	4.4	3.0	4.6	4.0	4.0
PD 690	3.3	5.0	4.0	3.6	3.6	5.0	4.0	4.4
Va. 187	3.6	3.4	4.0	3.6	2.7	4.0	4.0	4.6
McNair 151	4.4	5.0	4.0	4.3	4.0	5.0	5.0	5.0
NC 2326	3.3	3.9	3.5	3.5	2.3	4.0	3.3	4.3
PD 406	3.9	5.0	4.0	3.9	3.3	5.0	4.3	5.0
NC 1626-5C	3.9	5.0	4.0	3.9	3.3	4.6	4.6	5.0
Coker 62-323-24S	3.0	5.0	4.0	3.6	3.3	4.0	4.0	2.7
PD 29	3.5	5.0	4.0	4.5	4.0	5.0	4.0	5.0
Speight G-35	3.3	4.6	4.3	4.3	3.0	5.0	4.6	4.1
PD 32	4.3	5.0	4.0	3.6	4.0	4.4	5.0	4.7
Va. 1104	3.6	5.0	4.0	4.6	4.0	4.2	5.0	4.6
Speight G-36	3.4	3.6	4.0	3.7	3.3	4.0	4.0	2.7
Speight G-8	5.0	5.0	4.0	4.7	5.0	5.0	5.0	5.0
Speight G-20	4.0	5.0	4.0	4.2	4.0	4.0	5.0	4.5
Bissette's H-0-9	4.0	3.2	4.1	3.5	3.0	4.0	4.5	4.5
Coker 62-297-98S	3.7	3.5	4.0	3.8	3.2	4.0	4.0	3.5
NC 2316C	3.3	3.0	4.0	3.8	3.0	4.0	4.0	4.5
Bell 52	3.4	5.0	4.0	2.8	3.2	4.0	4.0	5.0
Coker 187-Hicks	3.3	3.0	4.0	3.8	2.8	4.0	4.0	3.8
Speight G-5	4.4	5.0	4.0	4.0	3.8	4.6	5.0	4.8
Coker 319	4.4	3.0	4.0	3.5	3.0	4.0	4.0	4.4

1/ Rating of 1 to 5, with 1 being best.

Table 11. Continued. TV 140 Rocky Mount - 1963. [1/]

Varieties or lines	COMPANY							
	A	B	C	D	E	F	G	H
Hicks	5.0	2.3	5.0	4.7	4.3	4.0	3.7	3.6
NC 95	3.8	4.0	4.2	4.1	3.1	4.0	2.6	4.6
NC TG-2	5.0	4.4	4.4	4.8	2.8	4.2	3.8	3.8
NC 2514C	5.0	4.7	5.0	4.3	4.2	4.3	3.6	4.5
PD 48	4.5	4.5	4.5	4.3	4.0	4.2	3.4	5.0
Reams A-6	3.9	4.2	4.3	4.3	3.7	4.3	3.0	4.6
Coker 62-213-27S	4.0	4.0	4.2	4.5	2.8	5.0	3.2	5.0
Reams D-10	3.9	5.0	4.2	4.4	3.5	3.7	2.7	4.7
Coker 62-247-48S	4.5	5.0	4.2	4.3	5.0	4.3	3.9	5.0
PD 690	4.6	5.0	4.2	4.8	5.0	4.8	3.9	5.0
Va. 187	4.1	5.0	4.3	4.5	5.0	4.3	4.0	5.0
McNair 151	4.2	4.0	4.5	4.5	5.0	5.0	4.0	4.2
NC 2326	4.4	3.6	4.4	4.4	3.7	4.4	4.4	3.7
PD 406	4.7	3.9	4.4	4.3	3.7	4.6	4.7	4.4
NC 1626-5C	5.0	5.0	4.7	4.7	3.7	4.6	4.7	4.3
Coker 62-323-24S	4.4	3.4	4.3	4.4	2.7	4.7	3.6	4.0
PD 29	4.7	4.7	4.3	4.7	4.3	4.8	4.7	5.0
Speight G-35	4.5	5.0	4.5	4.7	3.1	4.7	3.6	5.0
PD 32	4.5	5.0	4.5	4.5	3.9	5.0	5.0	5.0
Va. 1104	4.3	5.0	4.2	4.7	4.0	5.0	5.0	4.7
Speight G-36	5.0	5.0	4.6	5.0	4.4	5.0	5.0	5.0
Speight G-8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Speight G-20	3.8	4.5	4.3	4.3	3.3	3.8	4.0	4.3
Bissette's H-0-9	4.3	3.5	4.7	4.6	4.5	5.0	4.0	4.7
Coker 62-297-98S	4.2	3.9	4.0	4.2	2.7	4.5	3.5	3.9
NC 2316C	4.3	3.6	4.3	4.3	2.6	4.3	4.0	4.2
Bell 52	4.3	5.0	4.0	4.3	3.1	5.0	4.2	5.0
Coker 187-Hicks	4.5	4.0	4.2	4.3	2.8	5.0	4.2	5.0
Speight G-5	4.6	4.6	4.3	4.3	3.6	4.6	4.7	4.3
Coker 319	4.1	4.0	4.3	4.1	3.5	4.5	4.3	4.1

[1/] Rating of 1 to 5, with 1 being best.

Table 11. Continued. TV 141 Oxford - 1963.[1/]

Varieties or lines	COMPANY					
	A	B	C	D	E	F
Hicks	5.0	2.0	3.8	4.5	5.0	4.8
NC 95	3.8	3.3	3.4	4.2	4.2	4.0
NC TG-2	4.2	2.5	3.8	4.2	4.7	4.8
NC 2514C	4.5	3.5	3.5	4.5	4.7	4.8
PD 48	4.0	4.1	3.7	4.4	3.7	4.4
Reams A-6	4.1	4.5	4.0	4.1	5.0	5.0
Coker 62-213-27S	4.0	5.0	4.0	4.3	5.0	4.0
Reams D-10	4.3	5.0	4.0	4.7	3.9	5.0
Coker 62-247-48S	4.5	4.3	3.8	4.8	4.0	5.0
PD 690	4.4	5.0	4.4	4.7	4.0	5.0
Va. 187	4.5	3.5	4.0	4.8	5.0	4.8
McNair 151	5.0	5.0	4.4	4.7	5.0	5.0
NC 2326	3.4	2.0	3.4	4.1	4.0	4.0
PD 406	4.4	4.2	4.0	4.2	4.1	4.8
NC 1626-5C	4.4	4.8	3.6	4.2	4.0	4.4
Coker 62-323-24S	4.3	4.0	4.0	4.0	4.0	4.7
PD 29	4.3	5.0	3.7	4.7	4.3	5.0
Speight G-35	4.8	5.0	4.0	4.8	4.6	5.0
PD 32	4.4	5.0	4.0	4.4	5.0	4.8
Va. 1104	4.3	5.0	4.0	4.6	5.0	5.0
Speight G-36	4.3	4.3	4.0	4.6	5.0	5.0
Speight G-8	5.0	5.0	4.0	4.6	5.0	5.0
Speight G-20	4.2	4.5	4.0	4.8	5.0	4.8
Bissette's H-0-9	3.7	3.7	4.0	4.5	3.9	5.0
Coker 62-297-98S	5.0	5.0	4.0	4.7	4.2	5.0
NC 2316C	3.4	3.7	4.0	4.4	4.0	4.4
Bell 52	4.0	4.2	4.0	4.6	4.0	5.0
Coker 187-Hicks	3.7	3.0	4.0	4.0	4.0	4.0
Speight G-5	4.1	3.8	4.0	4.1	4.6	4.3
Coker 319	3.3	5.0	4.0	4.6	4.3	5.0

[1/] Rating of 1 to 5, with 1 being best.

Table 12. Results of Cooperative Evaluation Tests.[1/]

Varieties or lines	Border and Eastern Belts			Middle and Old Belts			Average		
	Yield	Value	Value/Cwt.	Yield	Value	Value/Cwt.	Yield	Value	Value/Cwt.
				Group A					
NC 95	1956	1246	63.79	2187	1381	63.10	2072	1314	63.45
C 319	2017	1276	63.17	1969	1226	62.56	1993	1251	62.86
Speight G-5	2078	1282	61.72	2126	1379	65.06	2102	1331	63.39
McNair 30	1868	1121	59.95	1781	1092	62.13	1825	1106	61.04
Hicks Broadleaf	1765	1058	59.97	1802	1102	61.88	1784	1080	60.92
L.S.D. (.05)	201	NS	NS	NS	NS	NS	238	NS	NS
(.01)	NS	NS	NS	NS	NS	NS	NS	NS	NS
C. V. (%)	6	12	9	13	15	5	10	14	7
				Group B					
Hicks Broadleaf	1786	1135	64.01	1682	990	58.28	1745	1077	61.72
NC 2512C	2329	1568	67.34	2322	1436	61.80	2327	1515	65.12
NC 2514C	2023	1293	63.99	2244	1328	59.24	2111	1307	62.09
NC 2326C	2005	1329	66.24	2143	1382	65.23	2060	1350	65.84
NC TG-2	2269	1488	65.73	2350	1405	60.30	2301	1455	63.56
L.S.D. (.05)	224	167	NS	NS	NS	NS	359	250	NS
(.01)	326	243	NS	NS	NS	NS	503	351	NS
C. V. (%)	6	6	4	12	14	9	9	9	6

[1/] Three growers in each area for each group except Group B in the Middle and Old Belt where only two locations are reported.

Table 13. Quality appraisal based on color, body and texture by companies on the Cooperative Variety Evaluation Test.

Varieties or lines	Company A	B	C	D	E	F	G	H
Border and Eastern Belts - Average of three growers								
Group A								
Coker 319	3.3	4.0	4.0	4.0	3.9	4.6	4.3	4.3
NC 95	3.5	3.9	4.0	4.1	3.8	4.5	4.1	3.9
McNair 30	3.4	4.2	3.8	4.2	4.0	4.4	4.5	4.3
Speight G-5	3.7	4.5	4.0	4.4	4.1	4.7	4.5	4.2
Hicks Broadleaf	3.5	4.0	3.8	4.3	4.3	4.5	4.7	4.5
Group B								
Hicks Broadleaf	3.4	4.6	3.4	4.3	4.1	4.2	4.7	4.4
NC TG-2	3.2	4.2	3.7	4.3	4.2	4.4	4.1	4.3
NC 2326C	3.1	4.3	3.8	4.6	3.9	4.1	4.3	4.4
NC 2512C	3.3	4.6	3.7	4.5	4.0	3.4	4.6	4.4
NC 2514C	3.3	4.6	4.0	4.6	4.1	4.5	4.8	4.7
Middle and Old Belts - Average of three growers								
Group A								
Coker 319	3.6	4.7	3.8	4.3	3.5	4.7	4.6	4.8
NC 95	3.2	4.5	3.7	4.6	3.3	4.1	4.3	4.4
McNair 30	3.5	4.8	3.8	4.8	3.5	4.4	4.6	4.6
Speight G-5	3.8	4.5	3.8	4.5	3.3	4.2	4.6	4.7
Hicks Broadleaf	3.5	4.6	4.0	4.8	3.5	4.3	4.3	4.7
Group B								
Hicks Broadleaf	3.8	4.7	4.1	4.5	3.6	4.8	4.8	4.7
NC TG-2	4.1	4.6	4.1	4.6	3.9	4.7	4.5	4.7
NC 2362C	3.4	4.5	3.8	4.5	3.6	4.4	4.5	4.5
NC 2512C	4.0	4.8	4.0	4.7	3.7	4.8	4.8	4.7
NC 2514C	3.8	4.6	4.1	4.6	3.7	4.7	4.7	5.0
Combined all belts - Average of six growers								
Group A								
Coker 319	3.4	4.4	3.9	4.2	3.7	4.6	4.4	4.6
NC 95	3.4	4.2	3.9	4.4	3.6	4.3	4.2	4.2
McNair 30	3.4	4.5	3.8	4.5	3.8	4.4	4.6	4.4
Speight G-5	3.8	4.5	3.9	4.4	3.7	4.4	4.6	4.4
Hicks Broadleaf	3.5	4.3	3.9	4.6	3.9	4.4	4.5	4.6
Group B								
Hicks Broadleaf	3.6	4.6	3.8	4.4	3.9	4.5	4.8	4.6
NC TG-2	3.6	4.4	3.9	4.4	4.1	4.6	4.3	4.5
NC 2326C	3.2	4.4	3.8	4.6	3.8	4.2	4.4	4.4
NC 2512C	3.6	4.7	3.8	4.6	3.9	4.1	4.7	4.6
NC 2514C	3.6	4.6	4.0	4.6	3.9	4.6	4.8	4.8

Table 14. Index[1/] on amount graded of each entry by eight participating companies from the twelve farms in the Cooperative Variety Evaluation Test.

Group A	Variety or line				
	NC 95	Coker 319	Speight G-5	McNair 30	Hicks Broadleaf
Border					
Hardin	2.06	2.60	1.22	2.35	1.75
Matthis	1.58	1.98	1.19	1.38	1.87
Eastern					
Jackson	2.80	1.89	1.97	2.33	2.46
Middle					
King	.57	1.05	1.67	.51	.26
Buchan	1.35	.89	.62	1.04	1.36
Old					
Evans	.74	.46	.56	.50	.68
Overall Average	1.50	1.50	1.20	1.40	1.40

Group B	Hicks Broadleaf	NC 2512C	NC 2514C	NC 2326C	NC TG-2
Border					
Edmund	2.59	2.20	1.69	3.13	3.57
East					
Harper	1.04	.89	.83	1.41	.87
Harrell	1.68	.72	1.32	.46	1.45
Middle					
McLeod	1.24	.48	1.26	2.02	1.13
Old					
Cobb	.17	.40	.11	.13	.18
Lawson	.82	.07	.67	.88	.53
Overall Average	1.30	.80	1.00	1.30	1.30

1/ 0 = none graded; 8 = all graded by all eight participating companies.

Table 15. Grower rating[1/] for preference for each entry in Cooperative Variety Evaluation Test.

Group A	Variety or line				
	Hicks Broadleaf	McNair 30	Speight G-5	Coker 319	NC 95
Border					
Hardin	1	5	3	4	2
Matthis	5	3	4	1	2
Eastern					
Jackson	5	3	1	4	2
Middle					
King	5	4	2	1	3
Buchan	4	3	5	2	1
Old					
Evans	1	2	4	3	5
Overall Average	3.5	3.3	3.2	2.5	2.5

Group B	Hicks Broadleaf	NC 2326C	NC TG-2	NC 2512C	NC 2514C
Border					
Edmund	4	1	5	2	3
Eastern					
Harper	5	1	4	2	3
Harrell	3	1	5	4	2
Middle					
McLeod	4	1	2	5	3
Cobb	5	2	4	3	1
Old					
Lawson	2	3	4	5	1
Overall Average	3.8	1.5	4.0	3.5	2.2

[1/] 1 = most desirable; 5 = least desirable.

Table 16. Grower practices by individual farms - 1963.

Belt and county	Farm	Soil fumigation	Date of planting	Date of 1st. harvest	Fertilizer	Top dressing	Insecticide	Curing unit	No. times irrigated
Border									
Robeson	Hardin	None	4/17 & 20	6-18	2000# 3-9-9	200# 8-0-24	Parathion, Sevin, Malathion	Buckeye	3
Columbus	Edmund	Shell DD 8 gal./A	4/12	6-24	1200# 3-9-9	500# 3-9-9	Endrin, DDT	Buckeye	0
Sampson	Matthis	None	4/26		1500# 3-9-9	150# 8-0-24	Parathion, Sevin	Silent Flame	4
Eastern									
Lenoir	Harper	Telone 7 gal./A	4/18 & 20	6-1	900# 3-9-9 500# 4-8-12	250# 8-0-24 80# 15-0-14	Endrin	Silent Flame	0
Wilson	Harrell	None	4/20 & 22	6-26	1400# 3-9-6	250# 8-0-24	Parathion, Endrin	Gastobac	1
Pitt	Jackson	Shell DD 8 gal./A	4/22	6-2	1200# 4-8-12	100# 15-0-14	Endrin, TDE, DDT	Gastobac	0
Middle									
Wake	King	Shell DD 11 gal./A	4/29	6-17	1000# 3-9-9	800# 4-8-12 150# Nit. of Soda 200# 8-0-24	Tob. Special Sevin, DDT	Gastobac	0
Vance	Buchan	None	5/16	7-27	1300# 3-9-9	200# 12-0-12	Endrin, DDT	Mayo	2
Moore	McLeod	None	5/8	7-24	800# 4-8-12	100# Nit. of Soda 200# Sul-Po-Mag. 200# 4-8-12	Endrin	Mayo	4
Old									
Guilford	Cobb	None	5/16	7-25	1100# 4-8-12	125# 15-0-14	Endrin	Jet	5
Rockingham	Evans	OMA-D 9 gal./A	5/14	7-25	1500# Lime 1050# 4-8-12	100# Nit. of Soda 150# 4-8-12	Parathion, Rothane, Guthion, DDT	Coal Stoker	16
Stokes	Lawson	None	5/17 & 20	8-1	1800# 3-9-9		DDT		0

Table 17. Cultural Practices for the Official Variety Test. 1963.

Station	Fertilization	Top dressing	Soil type	Fumigation	Irrig.	Date of 1st. harvest
Border Belt Tobacco Research Station Whiteville, N. C.	1000# Lime 900# 4-8-12	200# 4-8-12 100# 15-0-14	Norfolk fsl Marlboro fsl	None	0	July 2
Upper Coastal Plain Research Station Rocky Mt., N. C.	1025# 4-8-12	150# 15-0-14	Goldsboro sl Norfolk sl	23 gal. DD/A	0	July 8
Central Crops Research Station Clayton, N. C.	1200# 4-8-12	200# 8-0-24	Norfolk sl	None	0	July 9
Oxford Tobacco Research Station Oxford, N. C.	1200# 4-8-12	200# 8-0-24	Durham sl Enon sl	None	3.2 in.	July 16
Upper Piedmont Tobacco Research Station Reidsville, N.C.	850# 4-8-12	100# 4-8-12 50# 16% Nitrate of Soda	Appling sl	None	2.6 in.	July 7

Table 18. Rainfall record in inches - 1963.
Border Belt Tobacco Research Station - Whiteville, N. C.

Date	April	May	June	July	August	September
1					.15	
2			Trace	.14		
3				.40		
4						Trace
5			.07			.27
6	.17		.33			
7	.58	.02		.03		
8				.10	.13	
9	Trace		2.08	.97		
10	.04					
11					.56	
12						
13						1.85
14		Trace	.41	.06		.15
15				.04		.07
16	.04	.04	.06	.19		
17		.20	.29	.98		
18		1.72	.17	.23		
19			.06			
20		.62	Trace	.50		
21		1.50	Trace		.10	.57
22	.48	1.02	.10			.18
23		.37	.22	.45		
24			.05	.12		
25	.04	Trace	.17	1.10		Trace
26		.09	Trace		1.00	
27	.07	Trace	.10			
28	.15	.36	.46	.18		.12
29	.20	.10	.03	.10		3.15
30		.43			.07	.13
31				.05	.12	
TOTAL	1.77	6.47	4.60	5.64	2.13	6.49

Table 18. Continued. 1963
Upper Coastal Plains Research Station - Rocky Mount, N. C.

Date	April	May	June	July	August	September
1		.73			.15	
2			.14	.14		
3			.15	.20		
4						.03
5			.22			.85
6	.02		.08			.03
7	.89	.04				
8				Trace	.70	
9	.25			.02		
10	.12			.02		
11					.08	
12						
13					.81	
14		.09		.12	1.30	.19
15					Trace	.72
16		.09	.21	.26		.11
17	.03	.14	.21	.08		
18		.50	.02			
19				.08		
20		.15	.06	.04		
21		.12	.74		.03	
22		.31	.14			.02
23		.24			.17	
24				Trace		
25					.04	
26		.19			.30	
27				.03		
28				2.15		Trace
29	.11	.65	Trace			1.32
30	.28			.29	.02	.04
31				.55		
TOTAL	1.70	3.25	1.97	3.98	3.60	3.31

Table 18. Continued. 1963
Central Crops Research Station - Clayton, N. C.

Date	April	May	June	July	August	September
1		.68			.09	
2		.02				
3			.05	.51		
4						
5			.42			2.55
6			.04			
7	1.47	.11				
8						
9	.21			.30	.01	
10				.03		
11	.01				.10	
12						
13	.04				.11	
14				.24	.42	.49
15						.63
16		.09	.56			
17			.30			
18		1.14				
19						
20		.21	.28		.46	
21		.16	.72		.10	
22	.02	.69			.02	
23		.70	.18	.13		
24						
25				.06		
26		.27		.01	.95	
27		.08				
28		.18				.09
29	.17	.04		.10		1.90
30	.49		.15		.20	
31		.02		2.28		
TOTAL	2.41	4.39	2.70	3.66	2.46	5.66

Table 18. Continued. 1963.
Oxford Tobacco Research Station - Oxford, N. C.

Date	April	May	June	July	August	September
1					.25	
2			.08	1.12		
3			.27			
4						
5			1.48		.41	.36
6	.08					
7	.65	.04				
8						
9	.07			.55		
10						
11				.02		
12				1.69 1/		
13				.07	.13	
14		.02		.15		1.64
15		.02				.20
16		.05	.39			
17	.03	.07	.15	.28		
18		.02				
19					.03	
20		.12	Trace		2.35	
21		.59	1.10			
22		.02		1.60 1/	.61	
23		.28				
24				.03		
25				.55		
26		.10			.66	
27		Trace				
28		.15	.15	.53		
29	.38	.17				1.32
30	.54	.08	.14		Trace	
31				1.17		
TOTAL	1.75	1.73	3.76	4.56	4.44	3.52

1/ Irrigation

Table 18. Continued. 1963.
Upper Piedmont Tobacco Research Station - Reidsville, N. C.

Date	April	May	June	July	August	September
1				.07	.20	
2			.05	.33		
3			.27	.36		
4						.26
5					.23	.27
6	.14	.40				.28
7	.34			.05	.07	.01
8						
9	.08					
10				1/		
11				1.00	.10	
12						
13					.02 1/	
14				.15	.80 1/	.60
15					.80	
16			.25			
17	.04	.17	.12	.08		
18		.27				
19				.01	.20	
20			.10		.04	
21		1.60	.34			
22	.06	.27		Trace		
23		.17		1.08		
24				.10		
25				.30	Trace	
26		.03		.04	.37	
27		.20				
28		.16				
29	.65	.53	.15	.20		2.60
30	.45	.23		.18	.57	
31						
TOTAL	1.76	4.03	1.28	3.95	3.40	4.02

1/Irrigation