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Measured Crop Performance

SMALL GRAIN
1985

D. T. BOWMAN, Assistant Professor
In Charge of Variety Testing

Department of Crop Science
NORTH CAROLINA STATE UNIVERSITY
AT RALEIGH
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1985

PERFORMANCE OF SMALL GRAIN VARIETIES IN NORTH CAROLINA

INTRODUCTION

Across the state of North Carolina during the spring of 1984, growers harvested 64,000 acres of barley, 68,000 acres of oats, and 620,000 acres of wheat. Average yields were 63, 58, and 43 bushels per acre for barley, oats, and wheat, respectively. Conditions were generally favorable that year for excellent yields.

With the large number of commercially available and prospective varieties of barley, oats, and wheat, it becomes difficult for growers to select a superior variety suited for their particular area of the state. To make this decision, the grower needs up-to-date, unbiased, reliable information. The Official Variety Testing Program, through this report, seeks to provide that type of information.

Information on varietal performance is presented from seven test locations in the state—four in the Piedmont, and three in the Coastal Plain. Also included are multiple-year performance data on a selected number of varieties.

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1/ Research technicians, Ray Adams, G. C. Oliver, and Dwight Parrish assisted in conducting these tests along with Hope Thompson. Carey Parsons prepared the text and tables for this bulletin.
COMPARING VARIETIES

Performance of a variety cannot be determined with absolute precision. Even though the tests are conducted in a uniform manner, as much as possible, uncontrollable variability exists among experimental plots due to soil, fertility, moisture, insects, diseases, and other sources of variation. Because this variability exists, statistics are used as a tool to determine differences among varieties. The size of difference among varieties which may have been due to chance variation is listed in each table as the B.L.S.D. (least significant difference). Those varieties which do not differ by more than the B.L.S.D. are not statistically different.

VARIETAL PERFORMANCE MAY APPEAR INCONSISTENT AMONG LOCATIONS WITHIN AN AREA OR AMONG YEARS AT A PARTICULAR LOCATION, THUS IT IS IMPORTANT FOR THE READER TO EXAMINE RESULTS FROM MORE THAN ONE LOCATION WITHIN AN AREA OR MORE THAN ONE YEAR AT A PARTICULAR LOCATION, TO OBTAIN A MORE ACCURATE PICTURE OF RELATIVE VARIETAL PERFORMANCE. AN EFFORT HAS BEEN MADE TO FACILITATE COMPARISONS AMONG LOCATIONS AND YEARS IN THIS REPORT.

THE VARIETIES WHICH DO NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY ARE DENOTED BY AN ASTERISK (*) NEXT TO THEIR YIELDS. THE RELATIVE PERFORMANCE OF A VARIETY ACROSS LOCATIONS WITHIN AN AREA CAN BE EASILY EVALUATED BY GOING ACROSS THE TABLE; THOSE VARIETIES WHICH ARE MOST FREQUENTLY MARKED BY AN ASTERISK WOULD BE
highly desirable. Other agronomic characteristics may be as equally important as yield. All available data regarding pathologic and agronomic characteristics of the varieties are found in Tables 1, 2, and 3 for barley, oats, and wheat, respectively.2/

It is suggested that the grower plant a small number of acres in a new variety when first determining if it is adapted to his farm.

2/ Special acknowledgment is due Drs. Paul Murphy and Ron Jarrett for their assistance in describing the characteristics of the varieties.
Table 1. Characteristics of barley varieties*

<table>
<thead>
<tr>
<th>Variety</th>
<th>Mildew resistance</th>
<th>Rust resistance</th>
<th>Scald resistance</th>
<th>Lodging resistance</th>
<th>Winter hardiness</th>
<th>Maturity</th>
<th>Test Weight</th>
<th>Length of awns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anson</td>
<td>Fair</td>
<td>Good</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>Medium</td>
<td>Awnless</td>
</tr>
<tr>
<td>Boone</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td>Medium</td>
<td>Medium</td>
<td>Short</td>
</tr>
<tr>
<td>Clayton</td>
<td>Good</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Early</td>
<td>Medium</td>
<td>Awnless</td>
</tr>
<tr>
<td>Milton</td>
<td>Fair</td>
<td>Good</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
<td>Early</td>
<td>Medium</td>
<td>Short</td>
</tr>
<tr>
<td>Redhill</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>V. Early</td>
<td>Medium</td>
<td>Awnless</td>
</tr>
<tr>
<td>Sussex</td>
<td>Excellent</td>
<td>Poor</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>V. Early</td>
<td>Low</td>
<td>Short</td>
</tr>
</tbody>
</table>

*These characteristics based upon all available observations.

Table 2. Characteristics of oat varieties*

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rust resistance</th>
<th>Smut resistance</th>
<th>Mosaic resistance</th>
<th>Maturity</th>
<th>Winter hardiness</th>
<th>Lodging resistance</th>
<th>Test Weight</th>
<th>Length 1b/bu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brooks</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Early</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>Med. High</td>
</tr>
<tr>
<td>Coker 716</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Med. High</td>
</tr>
<tr>
<td>Madison</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Medium</td>
<td>Fair</td>
<td>Excellent</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

*These characteristics based upon all available observations.
Table 3. Characteristics of wheat varieties*

<table>
<thead>
<tr>
<th>Variety</th>
<th>Leaf rust resistance</th>
<th>Mildew resistance</th>
<th>Mosaic resistance</th>
<th>Maturity</th>
<th>Winter Hardiness</th>
<th>Lodging resistance</th>
<th>Height of Straw</th>
<th>Test Weight lb/bu</th>
<th>Soft Wheat Milling Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caldwell</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Fair</td>
<td>Medium</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>Compton</td>
<td>Good</td>
<td>Poor</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Excellent</td>
<td>Semi-Dwarf</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>Coker 747</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Good</td>
<td>Semi-Dwarf</td>
<td>High</td>
<td>Fair</td>
</tr>
<tr>
<td>Coker 762</td>
<td>Good</td>
<td>Poor</td>
<td>Good</td>
<td>Medium</td>
<td>Fair</td>
<td>Fair</td>
<td>Semi-Dwarf</td>
<td>Medium</td>
<td>Fair</td>
</tr>
<tr>
<td>Coker 797</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>Early</td>
<td>Fair</td>
<td>Excellent</td>
<td>Semi-Dwarf</td>
<td>Medium</td>
<td>Fair</td>
</tr>
<tr>
<td>Coker 916</td>
<td>Good</td>
<td>Excellent</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Excellent</td>
<td>Semi-Dwarf</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>Coker 983</td>
<td>Good</td>
<td>Excellent</td>
<td>Good</td>
<td>Med. Early</td>
<td>Fair</td>
<td>Excellent</td>
<td>Semi-Dwarf</td>
<td>Medium</td>
<td>Good</td>
</tr>
<tr>
<td>Hunter</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Early</td>
<td>Fair</td>
<td>Excellent</td>
<td>Semi-Dwarf</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>Massey</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>Medium</td>
<td>Fair</td>
</tr>
<tr>
<td>McNair 1003</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>Fair</td>
<td>Excellent</td>
<td>Medium</td>
<td>Medium</td>
<td>Good</td>
</tr>
<tr>
<td>Pioneer Brand 2550</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>High</td>
<td>Fair</td>
</tr>
<tr>
<td>Saluda</td>
<td>Good</td>
<td>Poor</td>
<td>Fair</td>
<td>Medium</td>
<td>Good</td>
<td>Fair</td>
<td>Medium</td>
<td>Medium</td>
<td>Fair</td>
</tr>
<tr>
<td>Scotty</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Excellent</td>
<td>Medium</td>
<td>Excellent</td>
<td>Fair</td>
</tr>
<tr>
<td>Tyler</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
<td>Late</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>Wheeler</td>
<td>Poor</td>
<td>Poor</td>
<td>Good</td>
<td>Medium</td>
<td>Good</td>
<td>Good</td>
<td>Medium</td>
<td>High</td>
<td>Fair</td>
</tr>
</tbody>
</table>

*These characteristics based upon all available observations.
EXPERIMENTAL PROCEDURE

The state is divided into physiographic regions and tests were located in the Piedmont and Coastal Plain (Figure 1). Three tests were located on private farms and five were on research stations.

Entries: Commercial varieties and experimental lines developed by public and private agencies are included in these tests. Any individual or firm may make application for having entries included by writing the Department of Crop Science, North Carolina State University at Raleigh. A fee is charged on an entry basis for all private entries. Entries about which further information was desired may have been included on a no-fee basis. A total of 11, 7, and 26 commercial varieties and experimental lines of barley, oats, and wheat, respectively, were evaluated in the 1984-85 season.

Field Plot Design: A randomized, complete block design with four or six replications was used at each location. Each plot consisted of seven rows, seven inches apart, fifteen feet long with two feet between each plot.

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3/ The cooperative spirit and civic-minded service rendered by the farmers who provided the land and the necessary cultural practices for these trials and the cooperation of the county agents are gratefully acknowledged.

4/ Statistical analyses were made in the statistical laboratory under the supervision of Dr. J. O. Rawlings, Mrs. Sandra Donaghy, and Mrs. Faye Childers. This assistance is gratefully acknowledged.
Crop Management: Cultural practices, such as seed bed preparation, date of planting, fertilization and topdressing were in accord with good farming practices and were uniform for all entries at a given location (Table 4). Prior to planting each test, soil samples were obtained from the test field and fertilizer and lime applications were made accordingly (Table 5).
FIGURE 1—LOCATION OF SMALL GRAIN PERFORMANCE TRIALS

*Signifies Official Variety Test Locations*
Table 4. Cultural practices for small grain tests, 1984-85.

<table>
<thead>
<tr>
<th>County</th>
<th>Fertilizer lbs/A &amp; Grade</th>
<th>Topdress lbs/A</th>
<th>Soil Type</th>
<th>Date of Planting</th>
<th>Date of Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Piedmont Area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catawba</td>
<td>300 lbs. 12-34-0</td>
<td>168 lbs. 33.5% N</td>
<td>Sandy Clay Loam</td>
<td>Oct. 10</td>
<td>June 10 - Barley Oats &amp; Wheat Discarded</td>
</tr>
<tr>
<td>Granville</td>
<td>400 lbs. 10-20-20</td>
<td>188 lbs. 33.5% N</td>
<td>Vance Sandy Loam</td>
<td>Oct. 9</td>
<td>Discarded</td>
</tr>
<tr>
<td>Guilford</td>
<td>400 lbs. 10-20-20</td>
<td>150 lbs. 33.5% N</td>
<td>Cecil Sandy Clay Loam</td>
<td>Oct. 29</td>
<td>June 18</td>
</tr>
<tr>
<td>Rowan</td>
<td>700 lbs. 10-20-20</td>
<td>60 lbs. 33.5% N</td>
<td>Cecil Sandy Loam</td>
<td>Oct. 8</td>
<td>June 10 - Barley Oats &amp; Wheat Discarded</td>
</tr>
<tr>
<td><strong>Coastal Plain Area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pasquotank</td>
<td>500 lbs. 4-12-24</td>
<td>224 lbs. 33.5% N</td>
<td>Elkton Fine Sandy Loam</td>
<td>Oct. 23</td>
<td>June 11</td>
</tr>
<tr>
<td>Lenoir</td>
<td>300 lbs. 10-10-20</td>
<td>280 lbs. 33.5% N</td>
<td>Goldsboro Loamy Sand</td>
<td>Oct. 11</td>
<td>May 28 - Barley Oats Discarded</td>
</tr>
<tr>
<td>Sampson</td>
<td>400 lbs. 10-10-10</td>
<td>224 lbs. 33.5% N</td>
<td>Orangeburg Loamy Sand</td>
<td>Oct. 26</td>
<td>June 4 - Wheat</td>
</tr>
<tr>
<td>Washington</td>
<td>500 lbs. 4-6-18</td>
<td>280 lbs. 33.5% N</td>
<td>Cape Fear Sandy Loam</td>
<td>Oct. 18</td>
<td>May 28 - Barley Oats Discarded</td>
</tr>
</tbody>
</table>

Table 5.  Soil test results from test sites, 1984-85.

<table>
<thead>
<tr>
<th></th>
<th>HM %</th>
<th>W-V</th>
<th>CEC</th>
<th>BS %</th>
<th>Ac</th>
<th>pH</th>
<th>P-I</th>
<th>K-I</th>
<th>Ca %</th>
<th>Mg %</th>
<th>Mn-I</th>
<th>Zn-I</th>
<th>Cu-I</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIEDMONT AREA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granville</td>
<td>0.3</td>
<td>1.27</td>
<td>2.5</td>
<td>68</td>
<td>0.8</td>
<td>5.7</td>
<td>166</td>
<td>48</td>
<td>43.7</td>
<td>15.1</td>
<td>96</td>
<td>36</td>
<td>38</td>
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<tr>
<td>Guilford</td>
<td>0.3</td>
<td>1.10</td>
<td>7.3</td>
<td>89</td>
<td>0.8</td>
<td>6.4</td>
<td>47</td>
<td>116</td>
<td>63.2</td>
<td>17.9</td>
<td>625</td>
<td>136</td>
<td>122</td>
</tr>
<tr>
<td>Catawba</td>
<td>0.6</td>
<td>1.20</td>
<td>4.9</td>
<td>83</td>
<td>0.8</td>
<td>6.1</td>
<td>26</td>
<td>46</td>
<td>59.7</td>
<td>18.3</td>
<td>101</td>
<td>33</td>
<td>32</td>
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<tr>
<td>Rowan</td>
<td>0.2</td>
<td>1.11</td>
<td>6.1</td>
<td>80</td>
<td>1.2</td>
<td>5.4</td>
<td>17</td>
<td>124</td>
<td>54.3</td>
<td>14.8</td>
<td>625</td>
<td>31</td>
<td>144</td>
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<tr>
<td><strong>COASTAL PLAIN AREA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pasquotank</td>
<td>0.6</td>
<td>1.12</td>
<td>3.6</td>
<td>55</td>
<td>1.6</td>
<td>5.2</td>
<td>147</td>
<td>62</td>
<td>36.4</td>
<td>10.1</td>
<td>178</td>
<td>78</td>
<td>50</td>
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<tr>
<td>Sampson</td>
<td>0.3</td>
<td>1.39</td>
<td>1.7</td>
<td>76</td>
<td>0.4</td>
<td>6.0</td>
<td>128</td>
<td>32</td>
<td>48.2</td>
<td>18.1</td>
<td>104</td>
<td>38</td>
<td>266</td>
</tr>
<tr>
<td>Lenoir</td>
<td>0.5</td>
<td>1.27</td>
<td>3.4</td>
<td>64</td>
<td>1.2</td>
<td>5.3</td>
<td>124</td>
<td>78</td>
<td>38.8</td>
<td>13.7</td>
<td>26</td>
<td>28</td>
<td>30</td>
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<tr>
<td>Washington</td>
<td>5.2</td>
<td>0.84</td>
<td>11.4</td>
<td>68</td>
<td>3.6</td>
<td>5.4</td>
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<td>48</td>
<td>44.0</td>
<td>22.2</td>
<td>9</td>
<td>67</td>
<td>38</td>
</tr>
</tbody>
</table>
Agencies Sponsoring Entries

AgriPro
Arkansas Agric. Expt. Station
Florida Agricultural Experiment Station
Illinois Agricultural Experiment Station
North Carolina Agric. Experiment Station
Pioneer Hi-Bred International, Inc.
Purdue University Agric. Expt. Station
Rohm and Haas Seeds
South Carolina Agric. Experiment Station
Virginia Agricultural Experiment Station

Entries
Hunter
Nelson, Rosen
Florida
Scotty
Anson, Boone, Clayton
Milton, Brooks, NC
Madison
Pioneer
Caldwell, Compton, Adder
Coker, McNair, HW
Redhill, Simpson
Sussex, Massey, Tyler
VA, Wheeler, Saluda

Cooperators

Piedmont

Granville County: Bill Clements, Superintendent, Oxford Tobacco Research Station, Oxford, NC
Agricultural Extension Agent, Derek Day.
Catawba County: Stanly Stewart, Promiseview Farms, Newton, NC
Agricultural Extension Agent, Bobby Simpson.
Guilford County: Rick Apple, 5389 NC 150E, Brown Summit, NC
Agricultural Extension Agent, Chris Ingram.
Rowan County: Billy Ayscue, Superintendent, Piedmont Research Station, Salisbury, NC.
Agricultural Extension Agent, Kevin Fisher.

Coastal Plain

Pasquotank County: John Madre, R-3, Box 473, Elizabeth City, NC
County Extension Chairman, Donald W. Baker.
Sampson County: Fred Cumbo, Supt., Hort. Res. Sta., R-5, Box 43, Clinton, NC.
Agricultural Extension Agent, Tommy Glover.
Lenoir County: Sandy Barnes, Superintendent, Lower Coastal Plain Tobacco Research Station, Kinston, NC.
Agricultural Extension Agent, Johnnie Jones, III.
Washington County: John Smith, Superintendent, Tidewater Research Station, Plymouth, NC.
Agricultural Extension Agent, Al Hight.
SEASONAL CONDITIONS

The 1984-85 small grain growing season was characterized by below-normal rainfall and above-normal temperatures for the most part. Record breaking low temperatures in January caused substantial damage to stands of oats and resulted in loss of tests at four locations. A record low temperature in the second week of April severely reduced yields of some early-maturing barley and wheat varieties. Rainfall data at four locations are shown below:

<table>
<thead>
<tr>
<th>Location</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
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<tr>
<td>Granville</td>
<td>2.49</td>
<td>1.96</td>
<td>2.73</td>
<td>4.79</td>
<td>4.70</td>
<td>1.15</td>
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<td>4.13</td>
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<td>Lenoir</td>
<td>0.84</td>
<td>1.31</td>
<td>1.29</td>
<td>4.34</td>
<td>4.62</td>
<td>1.34</td>
<td>0.48</td>
<td>1.44</td>
</tr>
<tr>
<td>Rowan</td>
<td>2.16</td>
<td>1.82</td>
<td>2.06</td>
<td>3.27</td>
<td>5.89</td>
<td>1.09</td>
<td>1.19</td>
<td>3.33</td>
</tr>
<tr>
<td>Washington</td>
<td>0.33</td>
<td>1.92</td>
<td>1.16</td>
<td>5.00</td>
<td>3.00</td>
<td>1.80</td>
<td>0.67</td>
<td>1.10</td>
</tr>
</tbody>
</table>

Dates of planting during the fall of 1984 were near normal although fields were generally dry. Above-normal temperatures in December resulted in considerable growth of small grains which increased their vulnerability to the record cold temperatures in January. Leaf rust was evident in the spring although not to the extent where viable ratings could be taken. Ratings of wheat varieties are reported for powdery mildew. Cereal leaf beetle was evident at several locations and at the Rowan County location they appeared to be more concentrated on the barley.

Topdressing of small grains was on time. Dry, warm weather caused the crop to mature earlier than normal and to
reveal very little differences (in maturity) among the varieties. Harvesting progressed rapidly and all tests had been harvested by June 18.

Yields were below-normal due primarily to the dry spring. Protein levels in the wheat were far above average and it is thought to be a result of the unique weather.

DATA

Yield is reported in bushels per acre by location, across locations within areas and across all locations within the state. Test weights in pounds per bushel were reported averaged by area and averaged across the state. Lodging was reported in percentage averaged across all locations within the state; the lodging data are for lodging prior to harvest. After harvest losses were negligible for all crops and, thus, were not reported.

Date 50% headed and date of physiological maturity were taken at the Granville County location and reported in the state-wide average. Date of physiological maturity is considered when the grain is dried down to 18% moisture.

Disease ratings are reported in the state-wide averages although they may have only been taken at one or two locations.

Certain varieties were tested only in the Coastal Plain while other varieties were tested in the Piedmont only. Tables reflect these differences.

Coded samples of wheat were submitted for wheat and flour analyses to the Bartlett Milling Company, Stateville, North Carolina. Such analyses are helpful in determining
whether released or potential varieties are suitable for the mills in terms of quality. A general protein content of 8 to 11% is desirable for soft red winter wheat.

Special acknowledgment is due Bartlett Milling Company and Howard Lemon, Quality Control Manager, for their assistance in making available these data.

Yield data were analyzed. The average yield of each test was indicated on the bottom of the tables. The B.L.S.D. K-50 is equivalent to the Fisher's L.S.D. at the 10% level. The standard error of the mean (s.e.) is an indicator of the precision of that test; the smaller the s.e., the more precise the estimate of yield is for any particular variety. The s.e. of the mean is equal to the standard deviation divided by the square root of N; N is normally the number of replications in the trials.

The averages across locations within an area such as Piedmont or Coastal Plain may not appear to equal that of the average between the locations; this is due to the fact that different number of replications was used at each location and the total number of replications was used in calculating the average across locations within an area and across all locations for the state-wide average.
RESULTS AND DISCUSSION

**Barley**

Barley performance is summarized across the state for 1985 in Table 6 while two and three-year averages across the state are shown in Tables 7 and 8. Anson and Milton significantly outyielded all other varieties when averaged across locations with an average yield of 70 bushels per acre. Test weights were low for all varieties which is thought to be a result of the environment since plots were harvested as early as feasible. Milton appears at the top of the two and three year averages. Date of 50% headed is the most critical trait to examine for those growers wishing to plant an early-maturing variety since the data reveal very little difference in physiological maturity.

Across the Piedmont, Anson, Milton, and Va. 83-42-63 led the group in yield (Table 9). Highest yields of barley were recorded at the Catawba County location.

In the Coastal Plain, Milton was the highest yielder at both locations (Table 10).

**Oats**

Oat yields were below average across the state in 1985 (Table 11). Coker 716 continues to outyield all other varieties across the state for 1985 and the past two and three years (Table 11, 12, 13, respectively). Although lodging percentages may appear high, after harvest losses due to lodging were negligible.

In the Piedmont, Simpson, a new oat variety out of South Carolina, yielded 56 bushels per acre to lead the
group (Table 14). In the Coastal Plain, Coker 716 yielded 99 bushels per acre across all three locations (Table 15) while Madison is the two and three-year yield leader in this region.

**Wheat**

An experimental, NC 81-58, was the highest wheat yielder across the state for 1985 while six others did not yield significantly less (Table 16). Test weights were low and plant height was low; both were a result of the environment. All varieties had matured by the end of May at the Granville County location and would have been ready to harvest by June 7 depending on the shower activity. Many varieties which appeared to have resistance to powdery mildew in the past were rated to be susceptible or even very susceptible this year. Protein levels were extremely high to the point of being unusable for the cracker and cookie industry; this may not be characteristic of the soft red winter wheat crop as a whole across North Carolina.

Table 17 and 18 show two and three-year averages, respectively, statewide. Plant height, date 50% headed, and date mature will be more typical of an average year rather than any one year such as 1985 in these tables.

Across the Piedmont, Tyler continues to lead the group in yield primarily because it is a later-maturing variety (Table 19). An experimental, NC 80-36, also performed well in 1985.
An experimental, NC 81-58, yielded four more bushels per acre than Florida 302 and Tyler across the Coastal Plain in 1985 to lead the wheat varieties, although it must be pointed out that this was not a significant yield increase (Table 20). Saluda leads the two and three year average for yield.
Table 6. Summary of barley performance trials across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield Bu/A</th>
<th>Test Weight lbs/bu</th>
<th>Lodging %</th>
<th>Plant Ht. in.</th>
<th>Date 50% Headed</th>
<th>Date Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anson</td>
<td>70**</td>
<td>38.8</td>
<td>50</td>
<td>23</td>
<td>4-15</td>
<td>5-19</td>
<td></td>
</tr>
<tr>
<td>Milton</td>
<td>70**</td>
<td>36.2</td>
<td>16</td>
<td>22</td>
<td>4-13</td>
<td>5-21</td>
<td></td>
</tr>
<tr>
<td>+NC</td>
<td>82-34</td>
<td>63</td>
<td>10</td>
<td>23</td>
<td>4-15</td>
<td>5-17</td>
<td></td>
</tr>
<tr>
<td>+VA</td>
<td>83-42-63</td>
<td>60</td>
<td>34</td>
<td>19</td>
<td>4-13</td>
<td>5-17</td>
<td></td>
</tr>
<tr>
<td>+NC</td>
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<td>5-18</td>
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<td>Boone</td>
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<td>35.8</td>
<td>22</td>
<td>20</td>
<td>4-14</td>
<td>5-18</td>
<td></td>
</tr>
<tr>
<td>+NC</td>
<td>81-4</td>
<td>55</td>
<td>27</td>
<td>23</td>
<td>4-14</td>
<td>5-17</td>
<td></td>
</tr>
<tr>
<td>Clayton</td>
<td>54</td>
<td>37.1</td>
<td>39</td>
<td>22</td>
<td>4-13</td>
<td>5-17</td>
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</tr>
<tr>
<td>+NC</td>
<td>82-22</td>
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<td>21</td>
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<td>5-15</td>
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<tr>
<td>Sussex</td>
<td>51</td>
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<td>15</td>
<td>22</td>
<td>4-10</td>
<td>5-17</td>
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</tr>
<tr>
<td>Redhill</td>
<td>37</td>
<td>37.0</td>
<td>8</td>
<td>21</td>
<td>4-10</td>
<td>5-17</td>
<td></td>
</tr>
</tbody>
</table>

Mean: 57
C.V. (%): 9.4
B.L.S.D. (K-50): 19
s.e.: 7.2
Error d.f.: 30

1/ Data taken from Granville County Test. Date mature indicates 18% moisture; grain should be dry for harvest approximately 7 days after this date.

**Highest yielder.

+Experimental.
Table 7. Two year average barley performance across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date 50% Headed</th>
<th>Date Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milton</td>
<td>79</td>
<td>33.1</td>
<td>42</td>
<td>32</td>
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<td>4-20</td>
<td>5-25</td>
</tr>
<tr>
<td>Boone</td>
<td>70</td>
<td>36.0</td>
<td>48</td>
<td>29</td>
<td></td>
<td>4-20</td>
<td>5-26</td>
</tr>
<tr>
<td>Sussex</td>
<td>69</td>
<td>37.3</td>
<td>37</td>
<td>30</td>
<td></td>
<td>4-13</td>
<td>5-25</td>
</tr>
<tr>
<td>+NC</td>
<td>80-1</td>
<td>69</td>
<td>38.6</td>
<td>37</td>
<td></td>
<td>4-21</td>
<td>5-25</td>
</tr>
</tbody>
</table>

+Experimental.

Table 8. Three year average barley performance across the state.

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<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milton</td>
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<td>34.6</td>
<td>33</td>
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<td>5-30</td>
</tr>
<tr>
<td>Boone</td>
<td>66</td>
<td>38.1</td>
<td>34</td>
<td>34</td>
<td></td>
<td>5-30</td>
</tr>
<tr>
<td>80-1</td>
<td>66</td>
<td>40.0</td>
<td>26</td>
<td>34</td>
<td></td>
<td>5-29</td>
</tr>
<tr>
<td>Anson</td>
<td>65</td>
<td>38.5</td>
<td>39</td>
<td>36</td>
<td></td>
<td>5-31</td>
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</tbody>
</table>

+Experimental

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Rowan County Yield</th>
<th>Catawba County Yield</th>
<th>1985 Average Yield</th>
<th>Two Year Average Yield</th>
<th>Three Year Average Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>bu/A</td>
<td>lbs/bu</td>
<td>lbs/bu</td>
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<td>Test Wt.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anson</td>
<td>81**</td>
<td>93**</td>
<td>86**</td>
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<td>75</td>
</tr>
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<td>Milton</td>
<td>77*</td>
<td>89*</td>
<td>82*</td>
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<td>84</td>
<td>77</td>
</tr>
<tr>
<td>+VA</td>
<td>83-42-63</td>
<td>78*</td>
<td>80*</td>
<td>40.8</td>
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<td></td>
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<td>72</td>
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<td>67</td>
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</tr>
<tr>
<td>+NC</td>
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<td>61</td>
<td>39.1</td>
<td>74</td>
<td>62</td>
</tr>
<tr>
<td>Sussex</td>
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<td>55</td>
<td>44</td>
<td>40.2</td>
<td>63</td>
<td>49</td>
</tr>
<tr>
<td>Redhill</td>
<td>36</td>
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<td></td>
<td></td>
</tr>
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<td></td>
<td>Mean of Test</td>
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<td>71</td>
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</tr>
<tr>
<td></td>
<td>C.V. (%)</td>
<td>9.5</td>
<td>6.7</td>
<td>8.1</td>
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</tr>
<tr>
<td></td>
<td>B.L.S.D. (K-50)</td>
<td>6</td>
<td>6</td>
<td>9</td>
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<tr>
<td></td>
<td>s.e.</td>
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<td>2.6</td>
<td>7.2</td>
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</tr>
<tr>
<td></td>
<td>Error d.f.</td>
<td>40</td>
<td>30</td>
<td>10</td>
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</tr>
</tbody>
</table>

**Highest yielder in test.
*Not significantly different from highest yielder.
+Experimental.
### Table 10. Summary of barley performance trials in the Coastal Plain.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Lenoir County Yield</th>
<th>Washington County Yield</th>
<th>1985 Average</th>
<th>Two Year Average</th>
<th>Three Year Average</th>
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<td>bu/A</td>
<td>bu/A</td>
</tr>
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<td>65**</td>
<td>59**</td>
<td>34.3</td>
<td>73</td>
</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anson</td>
<td></td>
<td>48</td>
<td>60*</td>
<td>54*</td>
<td>38.1</td>
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</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>51*</td>
<td>51</td>
<td>51*</td>
<td>35.1</td>
<td>64</td>
</tr>
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<td>45</td>
<td>48</td>
<td>47*</td>
<td>38.2</td>
<td>64</td>
</tr>
<tr>
<td>+VA</td>
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<td>28</td>
<td>56</td>
<td>42*</td>
<td>37.5</td>
<td>60</td>
</tr>
<tr>
<td>Sussex</td>
<td></td>
<td>25</td>
<td>58</td>
<td>42*</td>
<td>34.3</td>
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<tr>
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<td>Redhill</td>
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<table>
<thead>
<tr>
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<tr>
<td>C.V. (%)</td>
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<td>11.2</td>
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<td>B.L.S.D. (K-50)</td>
<td>3</td>
<td>6</td>
<td>NS</td>
</tr>
<tr>
<td>s.e.</td>
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<tr>
<td>Error d.f.</td>
<td>40</td>
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<td>10</td>
</tr>
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</table>

**Highest yielder
*Not significantly different from the highest yielder
+Experimental.
Table 11. Summary of oat performance trials across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Height Inches</th>
<th>50% Heading</th>
<th>Date 1/</th>
<th>Winter 2/ Kill %</th>
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<td>Coker</td>
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<td>Simpson</td>
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<td>28</td>
<td>4-24</td>
<td>14</td>
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<td>Brooks</td>
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<td>11</td>
<td>28</td>
<td>4-23</td>
<td>71</td>
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<td>Madison</td>
<td>80*</td>
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<td>22</td>
<td>4-23</td>
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<td>28</td>
<td>4-23</td>
<td>73</td>
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<td>C.V. (%)</td>
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1/ Data taken from Granville County location.
2/ Data taken from Sampson County.

**Highest yielder.
+Experimental.
Table 12. Two year average oat performance across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date¹/ 50% Headed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coker</td>
<td>716</td>
<td>118</td>
<td>32.2</td>
<td>44</td>
<td>36</td>
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<tr>
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<td>112</td>
<td>31.4</td>
<td>7</td>
<td>30</td>
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</tr>
<tr>
<td>Brooks</td>
<td>106</td>
<td>30.7</td>
<td>25</td>
<td>37</td>
<td>5-1</td>
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</tr>
</tbody>
</table>

¹/ Data taken from Granville County test.

Table 13. Three year average oat performance across the state

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
</tr>
</thead>
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<tr>
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<td>109</td>
<td>34.3</td>
<td>29</td>
<td>38</td>
</tr>
<tr>
<td>Madison</td>
<td>106</td>
<td>32.1</td>
<td>5</td>
<td>31</td>
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<tr>
<td>Brooks</td>
<td>93</td>
<td>31.1</td>
<td>19</td>
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<th>Two Year Average</th>
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<td>bu/A 1bs/bu</td>
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<tr>
<td>+NC</td>
<td>Simpson</td>
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<td>95</td>
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<td>82-172</td>
<td>55*</td>
</tr>
<tr>
<td></td>
<td>Coker</td>
<td>82-264</td>
<td>32.1</td>
<td></td>
<td>27.8</td>
<td>72</td>
<td></td>
<td>30-274</td>
<td>31*</td>
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<tr>
<td></td>
<td>Brooks</td>
<td>716</td>
<td>53*</td>
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<td>75</td>
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**Highest yielder.
*Not significantly different from highest yielder.
+Experimental.
Table 15. Summary of oat performance trials in the Coastal Plain.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Lenoir County Yield Test</th>
<th>Washington County Yield Test</th>
<th>Pasquotank County Yield Test</th>
<th>1985 Average Yield Test</th>
<th>Two Year Average Yield Test</th>
<th>Three Year Average Yield Test</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td>bu/A</td>
<td>bu/A</td>
<td>bu/A</td>
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<td>lbs/bu</td>
</tr>
<tr>
<td>Coker</td>
<td>716</td>
<td>70**</td>
<td>105*</td>
<td>128*</td>
<td>99**</td>
<td>30.2</td>
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<td>114**</td>
<td>126*</td>
<td>94*</td>
<td>30.6</td>
<td>133</td>
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<td>113</td>
<td>90*</td>
<td>29.1</td>
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<td>87</td>
<td>120*</td>
<td>89*</td>
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<td>98</td>
<td>111</td>
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<td>76</td>
<td>110</td>
<td>74*</td>
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<td></td>
<td>C.V. (%)</td>
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<td>18</td>
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<tr>
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<td>s.e.</td>
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<td>6.0</td>
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<td>11.6</td>
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<td>Error d.f.</td>
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<td>18</td>
<td>12</td>
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**Highest yielder in test.
*Not significantly different from highest yielder.
+Experimental.
Table 16. Summary of wheat performance trials across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date 1/50% Headed</th>
<th>Date 1/Mature</th>
<th>Powdery 2/Mildew Rating</th>
<th>Protein %</th>
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<tr>
<td>+NC</td>
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<td>5-30</td>
<td>MS</td>
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<tr>
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<td>5-28</td>
<td>MS</td>
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<td>27</td>
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<td>5-29</td>
<td>R</td>
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<td>4-14</td>
<td>5-27</td>
<td>VS</td>
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<td>53.2</td>
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<td>5-27</td>
<td>VS</td>
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<td>53.2</td>
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<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
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<td>53.2</td>
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<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
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<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
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<td>53*</td>
<td>53.2</td>
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<td>5-27</td>
<td>VS</td>
<td>18.0</td>
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<td>53.2</td>
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<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
<tr>
<td>Florida</td>
<td>301</td>
<td>53*</td>
<td>53.2</td>
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<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
<tr>
<td>Florida</td>
<td>301</td>
<td>53*</td>
<td>53.2</td>
<td>0</td>
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<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
<tr>
<td>Florida</td>
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<td>53*</td>
<td>53.2</td>
<td>0</td>
<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
<tr>
<td>Florida</td>
<td>301</td>
<td>53*</td>
<td>53.2</td>
<td>0</td>
<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
</tr>
<tr>
<td>Florida</td>
<td>301</td>
<td>53*</td>
<td>53.2</td>
<td>0</td>
<td>23</td>
<td>4-14</td>
<td>5-27</td>
<td>VS</td>
<td>18.0</td>
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</tbody>
</table>

C.V. (%) 13.4  
B.L.S.D. (K-50) 7  
s.e. 5.5  
Error d.f. 68

1/ Data taken from Granville County test. Date mature indicates 18% moisture.  
2/ R = Resistant, MR = Moderately Resistant, MS = Moderately susceptible, S = Susceptible, VS = Very Susceptible.  
**Highest yielder.  
*Not significantly different from highest yielder.  
+Experimental.
Table 17. Two year average wheat performance across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date Headed</th>
<th>Date Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saluda</td>
<td>64</td>
<td>54.8</td>
<td>7</td>
<td>31</td>
<td>4-24</td>
<td>6-3</td>
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<tr>
<td>Tyler</td>
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<td>54.0</td>
<td>6</td>
<td>34</td>
<td>4-28</td>
<td>6-7</td>
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<tr>
<td>81-58</td>
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<td>10</td>
<td>32</td>
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<td>6-8</td>
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<td>13</td>
<td>32</td>
<td>4-23</td>
<td>6-4</td>
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<tr>
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<td>4-26</td>
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<td>28</td>
<td>4-22</td>
<td>6-3</td>
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<td>18</td>
<td>36</td>
<td>4-22</td>
<td>6-2</td>
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</table>
+Experimental.

Table 18. Three year average wheat performance across the state.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Lodging %</th>
<th>Plant Height Inches</th>
<th>Date Mature</th>
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+Experimental.
Table 19. Summary of wheat performance trials in the Piedmont.

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<th>Variety</th>
<th>Rowan County bu/a</th>
<th>Guilford County bu/A</th>
<th>1985 Average Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Two Year Average Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
<th>Three Year Average Yield bu/A</th>
<th>Test Wt. lbs/bu</th>
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<td>57*</td>
<td>61**</td>
<td>55.6</td>
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<tr>
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<td>48*</td>
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<td>54*</td>
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Mean of Test: 55 47 51

C.V. (%) 8.6 19.5 14.3
B.L.S.D. (K-50) 5 15 14
s.e. 2.4 4.6 8.8
Error d.f. 63 63 21

**Highest yielder.
*Not significantly different from highest yielder
**Table 20. Summary of wheat performance trials in the Coastal Plain.**

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<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Lenoir County (bu/A)</th>
<th>Washington County (bu/A)</th>
<th>Pasquotank County (bu/A)</th>
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<th>Two Year Average</th>
<th>Three Year Average</th>
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<th>Variety</th>
<th>Lenoir County (bu/A)</th>
<th>Washington County (bu/A)</th>
<th>Pasquotank County (bu/A)</th>
<th>1985 Average</th>
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**Highest yielder
*Not significantly different from highest yielder.
+Experimental.