EVALUATION OF 1983 TEXAS COTTON CROP

In December 1979, the Natural Fibers & Food Protein Commission of Texas (NFFPC) requested that the Textile Research Center evaluate the 1979 Texas cotton crop by complete fiber and spinning tests. This was conducted during the early months of 1980. Since that time, NFFPC has continued to sponsor an annual evaluation of Texas cotton. In this issue of Textile Topics we are presenting a partial report on the quality of the 1983 Texas cotton crop.

The purpose of these annual evaluations is to determine the quality of the cotton produced commercially in Texas and compile the results of the study in a report that will be useful to cotton producers and textile manufacturers. While it is impossible to test every bale of cotton, or even a high percentage of the Texas production, an attempt is always made to find typical cottons that will represent the production from various areas of the state. The eighteen bales included in the 1983 evaluation came from the Rio Grande Valley, the Coastal Bend area, the Rolling Plains of Central Texas, the High Plains of West Texas, and the El Paso area. We feel the information included in the report properly represents the cottons produced in Texas last year.

It is interesting for those who have worked for many years in the development of Texas cotton to note the quality changes that have taken place. Twenty years ago the average length (except for the extra-long staple produced in the El Paso area) was 15/16 of an inch. It is recalled that considerable effort was made during the early 1960's to increase the staple length which was important to ring spinning, the only method of manufacturing yarns at that time. Besides that, the marketing of cotton involved staple length and longer fibers would mean more money for producers. As a result of that effort, we find today that the length produced in this area is significantly longer, and two-thirds of the cotton included in this most recent evaluation was over one inch. The range of staples included in the full report was from 15/16 to 1-5/32 inch. It seems a little ironic, now that the length of Texas cotton has increased, that much of the production from this area is used for open-end spinning. The irony is that fiber length is not nearly so important to open-end spinning as it is to ring spinning.

Space does not permit us to carry the entire 1983 report, but we have selected fiber and yarn testing results from four lots that seem to be typical. These were selected on the basis of their length, strength and other fiber properties which we feel give a fair representation of the cottons used in the study.

We have already mentioned the length of the cotton included in the evaluation, and it seems appropriate to make some comment about fiber strength also. This appears to be increasingly more important to many textile manufacturers. The range of strength of the cottons in the study was from 22 to more than 29 grams/tex. The four lots selected for this issue of Topics range from about 23 to 27 grams/tex. Because we feel the values in these four tests more accurately represent the cotton produced in Texas last year, we have intentionally kept away from the extremes.

In the following tables, we are presenting fiber testing results from individual instruments, the Motion Control HVI 3000 System, and the Spinlab HVT 800 Series. While these three methods of measuring fiber properties show some variation, it must be remembered that the exact same sample was not used with each of the three separate systems, and the variation between samples taken from the same bale must be considered. (See Textile Topics Volume X, No. 11.)

Fiber testing was done by Mrs. Reva Whitt, head of our materials evaluation laboratory, and her staff of technicians. Ring spinning was supervised by Edwin R. Foster, head of TRC's mechanical processing laboratory, and open-end spinning by John B. Price, head of open-end spinning research, and his staff. As mentioned, this program was sponsored by the Natural Fibers & Food Protein Commission of Texas.
### TABLE II  LOT NUMBER 007

<table>
<thead>
<tr>
<th>Individual Instrument Data</th>
<th>HVI Data: MCI 3000</th>
<th>HVI Data: Spinlab 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stellometer Strength</td>
<td>23.59 g/ tex</td>
<td>22.8 g/ tex</td>
</tr>
<tr>
<td>Elongation</td>
<td>5.00 %</td>
<td>6.08 %</td>
</tr>
<tr>
<td>2.5% Span Length</td>
<td>0.973 in.</td>
<td>0.968 in.</td>
</tr>
<tr>
<td>Uniformity Ratio</td>
<td>44.2 %</td>
<td>78.0 %</td>
</tr>
<tr>
<td>Short Fiber Content</td>
<td>4.77 %</td>
<td>Microaire Index 4.70</td>
</tr>
<tr>
<td>Micronaire Index</td>
<td>4.68 Microaire Index 4.70</td>
<td></td>
</tr>
<tr>
<td>Pkcsy Strength</td>
<td>0.22 Mpd</td>
<td>Color Index 21-2</td>
</tr>
<tr>
<td>Shrinkage Non-Ist Content</td>
<td>1.80 %</td>
<td>Grade 31-1</td>
</tr>
</tbody>
</table>

### YARN PROPERTIES

<table>
<thead>
<tr>
<th>Spinning Machine</th>
<th>Textile M1/1 (OE)</th>
<th>Plas T 883 Side Feed (OE)</th>
<th>Saxo Lowell Ring Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Yarn Number (N$_y$)</td>
<td>6/1</td>
<td>10/1</td>
<td>18/1</td>
</tr>
<tr>
<td>Nominal Twist multipliers (c)</td>
<td>4.78</td>
<td>4.84</td>
<td>4.76</td>
</tr>
</tbody>
</table>

### TABLE VI  LOT NUMBER 915

<table>
<thead>
<tr>
<th>Individual Instrument Data</th>
<th>HVI Data: MCI 3000</th>
<th>HVI Data: Spinlab 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stellometer Strength</td>
<td>15.79 g/ tex</td>
<td>22.8 g/ tex</td>
</tr>
<tr>
<td>Elongation</td>
<td>5.00 %</td>
<td>6.08 %</td>
</tr>
<tr>
<td>2.5% Span Length</td>
<td>0.973 in.</td>
<td>0.968 in.</td>
</tr>
<tr>
<td>Uniformity Ratio</td>
<td>44.2 %</td>
<td>78.0 %</td>
</tr>
<tr>
<td>Short Fiber Content</td>
<td>4.77 %</td>
<td>Microaire Index 4.70</td>
</tr>
<tr>
<td>Micronaire Index</td>
<td>4.68 Microaire Index 4.70</td>
<td></td>
</tr>
<tr>
<td>Pkcsy Strength</td>
<td>0.22 Mpd</td>
<td>Color Index 21-2</td>
</tr>
<tr>
<td>Shrinkage Non-Ist Content</td>
<td>1.80 %</td>
<td>Grade 31-1</td>
</tr>
</tbody>
</table>

### YARN PROPERTIES

<table>
<thead>
<tr>
<th>Spinning Machine</th>
<th>Textile M1/1 (OE)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Nominal Yarn Number (N$_y$)</td>
<td>6/1</td>
<td>10/1</td>
<td>18/1</td>
</tr>
<tr>
<td>Nominal Twist multipliers (c)</td>
<td>4.78</td>
<td>4.84</td>
<td>4.76</td>
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## TABLE XIV
LOT NUMBER 1517

<table>
<thead>
<tr>
<th>Individual Instrument Data</th>
<th>HVI Data: MCI 3000</th>
<th>HVI Data: Spinlab 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stelometer Strength</td>
<td>25.59 g/tex</td>
<td>1/8&quot; Gauge Strength</td>
</tr>
<tr>
<td>Elongation</td>
<td>6.58 %</td>
<td>Elongation</td>
</tr>
<tr>
<td>2.5% Span Length</td>
<td>1.030 in.</td>
<td>UHM Length</td>
</tr>
<tr>
<td>Uniformity Ratio</td>
<td>47.3 %</td>
<td>Uniformity Ratio</td>
</tr>
<tr>
<td>Short Fiber Content</td>
<td>2.30 %</td>
<td></td>
</tr>
<tr>
<td>Micronaire Index</td>
<td>3.7</td>
<td>Micronaire Index</td>
</tr>
<tr>
<td>Proliny Strength</td>
<td>86.39 Mpsi</td>
<td></td>
</tr>
<tr>
<td>Shirley Non-Int Content</td>
<td>3.00 %</td>
<td></td>
</tr>
<tr>
<td>YARN PROPERTIES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spinning Machine
- Ritter M111 (G-E)
- Platt T-883 Side Feed (G-E)
- Saco Lowell Ring Frame

### Nominal Yarn Number (Nv)
- 8/1
- 10/1
- 16/1
- 22/1
- 8/1
- 10/1
- 16/1
- 22/1
- 8/1
- 10/1
- 16/1
- 22/1

### Nominal Twist Multiplier (v)
- 4.78
- 4.84
- 4.79
- 4.80
- 4.78
- 4.84
- 4.87
- 4.80
- 4.00
- 4.00
- 4.00

### Skin Test
- Actual Yarn Count (Nv)
- CV% of Count
- Skin Strength (lbs)
- CV% of Strength
- Count Strength Product
- CV% of CSP
- Simple Yarn Strength Test:
  - Tension (g/tex)
  - Mean Strength (g)
  - CV% of Break
  - Elongation (%)
  - CV% of Elongation
  - Specific Work of Rupture (g/tex)
  - CV% of Work of Rupture
  - Under Extension Test:
    - Non-Uniformity (CV%)
    - Thin Places/1,000 yds
    - Thick Places/1,000 yds
    - Hair Count/100 yds
    - ASTM Yarn Grade

### TABLE XV
LOT NUMBER 1518

<table>
<thead>
<tr>
<th>Individual Instrument Data</th>
<th>HVI Data: MCI 3000</th>
<th>HVI Data: Spinlab 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stelometer Strength</td>
<td>23.76 g/tex</td>
<td>1/8&quot; Gauge Strength</td>
</tr>
<tr>
<td>Elongation</td>
<td>6.08 %</td>
<td>Elongation</td>
</tr>
<tr>
<td>2.5% Span Length</td>
<td>1.005 in.</td>
<td>UHM Length</td>
</tr>
<tr>
<td>Uniformity Ratio</td>
<td>47.6 %</td>
<td>Uniformity Ratio</td>
</tr>
<tr>
<td>Short Fiber Content</td>
<td>2.10 %</td>
<td></td>
</tr>
<tr>
<td>Micronaire Index</td>
<td>4.12</td>
<td>Micronaire Index</td>
</tr>
<tr>
<td>Shirley Non-Int Content</td>
<td>86.2 %</td>
<td></td>
</tr>
<tr>
<td>YARN PROPERTIES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spinning Machine
- Ritter M111 (G-E)
- Platt T-883 Side Feed (G-E)
- Saco Lowell Ring Frame

### Nominal Yarn Number (Nv)
- 8/1
- 10/1
- 16/1
- 22/1
- 8/1
- 10/1
- 16/1
- 22/1
- 8/1
- 10/1
- 16/1
- 22/1

### Nominal Twist Multiplier (v)
- 4.78
- 4.84
- 4.79
- 4.80
- 4.78
- 4.84
- 4.87
- 4.80
- 4.00
- 4.00
- 4.00

### Skin Test
- Actual Yarn Count (Nv)
- CV% of Count
- Skin Strength (lbs)
- CV% of Strength
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- Simple Yarn Strength Test:
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  - Mean Strength (g)
  - CV% of Break
  - Elongation (%)
  - CV% of Elongation
  - Specific Work of Rupture (g/tex)
  - CV% of Work of Rupture
  - Under Extension Test:
    - Non-Uniformity (CV%)
    - Thin Places/1,000 yds
    - Thick Places/1,000 yds
    - Hair Count/100 yds
    - ASTM Yarn Grade
VISITORS We were pleased to have twenty-six members of the Texas Cowbelles Association come to the Textile Research Center for a visit and tour on April 27. Several classes from area colleges and high schools also toured the Center during April.

Other visitors included Glenn Morton, Cotton Incorporated, Raleigh, NC; Barbara Shaeffer and Larry Teague, Motion Control Inc., Dallas, TX; Jack T. Walker and J. T. Walker, Jr., Chickasha Gin Company, Anadarko, OK; Barnett Greenburg, North Texas State University, Denton, TX; Edwin N. Bateman, Mission Valley Mill, New Braunfels, TX; John Long, Textile Machinery & Supply, Richardson, TX; George R. Walker, Jr. and John B. Walker, Stoneville Pedigreed Seed, Stoneville, MS; Karre J. Klovstad, Pariso Glove Company, Knox, IN; and Erik Brambers, Orehro Agricultural Society, Orehro, Sweden.

EXPERIENCE A man could retire nicely in his old age if he could sell his experience for what it cost him.