



### ANNUAL TEXAS COTTON QUALITY REPORT

We published our first report on Texas cotton quality in 1980 and since that time we have issued a similar report on an annual basis. In this issue of *Textile Topics* we are giving the results of testing and processing two of the eighteen cottons included in the report for the 1989 crop. We have selected these particular ones to represent production in South Texas and the Western High Plains. The cottons described on the following pages make up a substantial percentage of the production in these areas and have been available commercially. Those presented here are DPL 50 from Corpus Christi, and Paymaster HS-26 from Lamesa, a city approximately sixty miles south of Lubbock. Sixteen other cottons are included in the full report on last year's quality.

Properties of each cotton are given preceding a summary of yarn quality in the tables on the following pages. Fiber testing was done on individual instruments such as the Stelometer, Fibrograph, Fibronaire and Pressley, and on a Motion Control HVI 3000 system. Additionally, we processed samples of each through the IIC/Shirley FMT instrument to obtain micronaire, fineness in millitex, and percent mature fibers. That was followed by testing on the Peyer Texlab AL-101, from which we obtained upper quartile length, mean length, coefficient of variation of mean length, and short fiber content.

A quick study of the fiber testing results will reveal differences in measurements resulting from testing with individual instruments and the HVI system. Instruments included in HVI units usually measure fiber strength slightly greater than the Stelometer, as was the case in the results given in this report. We would like to mention that when

studying differences in fiber measurements, there is considerable variation of properties within a single bale of cotton, regardless of how it is measured. We have published information on this in recent years and have pointed out that the exact same sample is not being measured by the different instruments.

(See the September 1987 issue of *Textile Topics*.)

The fact that different samples of a bale are being measured by different instruments in itself would lead to some variation of results, but the various instruments make their measurements in different ways, which leads to additional variation. In spite of this, we have found that fiber properties measured by any of the instruments have a fairly good correlation with spinning performance and yarn quality.

Additional information on this program is presented in the tables below. These give details of each of the spinning machines used, listing rotor type and speed along with opening roller type and speed for the Rieter m1/1 and the Schlafhorst Autocoro. For the ring spinning frame, we are giving the roving size, spindle speed, ring diameter, and twist multiplier.

The tables on the following pages show that we have spun three yarn numbers on each of the two rotor machines, while ring spinning produced two of the same numbers that can be used for comparison.

We believe the details of our testing are self-explanatory, so we will not elaborate further. However, if our readers should have questions about this information, we will be pleased to hear from you. Copies of the full report are available upon request. This study was sponsored by the Texas Food and Fiber Commission.

(a) ROTOR SPINNING

Sliver	55 gr/yd Finisher Drawframe					
	Rieter m1/1			Schlafhorst Autocoro		
Nominal Yarn Number ( $N_e$ )	10	22	30	10	22	30
Rotor Type	45 N St			T33		
Rotor Speed (rpm)	55,000			90,000		
Opening Roller Type	T.52			OB20		
Opening Roller Speed (rpm)	6700			7500		
Draft (approximate)	66	145	198	66	145	198
Twist Multiplier ( $\alpha_e$ )	4.85	4.80	4.78	4.78	4.79	4.79
Yarn Speed (yd/min)	99.5	67.7	58.3	165.4	111.3	95.3
Navel	Smooth Steel			4-grooved Ceramic		

(b) RING SPINNING

Roving Frame	Saco Lowell
Flyer Speed (rpm)	1425
Roving	1.0 hank
Ring Spinning Frame	Saco Lowell SF-3H
Spindle Speed (rpm)	10,000
Ring Diameter (in)	2
Twist Multiplier ( $\alpha_e$ )	4.00

FIBER PROPERTIES

Individual Instrument Data				HVI Data: MCI 3000				
Stelometer Strength	(g/tex)	25		1/8" Gauge Strength	(g/tex)	26		
Elongation	(%)	5.8		Elongation	(%)	7.8		
2.5% Span Length	(in)	1.05		Length	(in)	1.08		
Uniformity ratio	(%)	46		Uniformity Ratio	(%)	83		
Short Fiber Content	(%)	3.5		Micronaire Value		4.7		
Micronaire Value		4.9		Reflectance		77		
Pressley Strength	(Mpsi)	88.3		Yellowness		10.4		
Shirley Non-lint Content	(%)	1.00		Index of:	- Color - 12	- Leaf - 2		
IIC/Shirley F/MT Ia	Micronaire:	4.7	Fineness:	173 mtex	Percent Mature Fibers:	93.5		
Peyer Texlab AL-101	Upper Quartile Length:	1.03	Mean Length:	0.84	CV% of Mean:	29.8	Percent Short Fibers:	10.6

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
Nominal Yarn Number (N <sub>e</sub> )	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Twist Multiplier (α <sub>e</sub> )	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
<b>Skein Test:</b>									
Yarn Number (N <sub>e</sub> )	10.07	22.43	29.38	9.94	21.83	29.62	15.82	21.89	29.11
CV% of Yarn Number	0.5	0.9	1.1	0.4	0.7	0.5	1.2	0.9	1.8
Count-Strength-Product	2391	2084	1851	2406	2034	1817	2498	2365	2231
CV% of CSP	1.9	1.8	2.4	1.0	1.7	1.1	2.1	1.8	1.6
<b>Single-Yarn Test:</b>									
Tenacity (g/tex)	14.71	12.86	12.40	14.22	12.72	12.07	16.24	16.11	14.86
Mean Strength (g)	863	338	249	845	344	241	606	434	301
CV% of Break	6.4	9.6	9.8	6.1	9.3	9.3	10.3	10.0	10.6
Elongation (%)	7.20	5.73	5.53	7.64	6.18	5.98	6.26	6.57	5.96
CV% of Elongation	5.4	8.5	7.3	5.2	8.5	7.3	8.9	7.2	7.7
Spec. Work of Rupture (g/tex)	0.560	0.392	0.356	0.565	0.414	0.375	0.515	0.510	0.430
CV% of Work of Rupture	10.5	17.1	15.9	10.0	15.7	15.3	15.9	14.9	15.1
Initial Modulus (g/tex)	206	300	318	185	210	178	272	242	290
<b>Uster Evenness Test:</b>									
Non-Uniformity (CV%)	14.66	14.95	17.33	13.81	14.55	16.74	17.92	19.56	22.04
Thin Places/1,000 yds	5	39	176	1	27	140	124	226	545
Thick Places/1,000 yds	170	50	209	190	47	191	310	600	1112
Neps/1,000 yds	210	65	602	235	69	680	57	126	352
Hair Count/100 yds	301	78	79	938	399	245	696	672	979
ASTM Yarn Grade	C	B	C+	C	B	C	B	B	C

FIBER PROPERTIES

Individual Instrument Data				HVI Data: MCI 3000			
Stelometer Strength	(g/tex)	25		1/8" Gauge Strength	(g/tex)	27	
Elongation	(%)	5.8		Elongation	(%)	7.4	
2.5% Span Length	(in)	0.96		Length	(in)	1.00	
Uniformity ratio	(%)	45		Uniformity Ratio	(%)	81	
Short Fiber Content	(%)	7.4		Micronaire Value		3.9	
Micronaire Value		3.8		Reflectance		70	
Pressley Strength	(Mpsi)	85.5		Yellowness		11.2	
Shirley Non-lint Content	(%)	2.75		Index of: - Color - 33 - Leaf - 2			
IIC/Shirley F/MT Ia	Micronaire: 3.8		Fineness: 147 mtex		Percent Mature Fibers: 84.2		
Peyer Texlab AL-101	Upper Quartile Length: 0.95		Mean Length: 0.75		CV% of Mean: 35.9		Percent Short Fibers: 21.8

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
Nominal Yarn Number (N <sub>e</sub> )	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Twist Multiplier (α <sub>e</sub> )	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
<u>Skein Test:</u>									
Yarn Number (N <sub>e</sub> )	9.98	22.19	30.28	10.00	21.94	29.74	16.29	22.60	29.85
CV% of Yarn Number	1.0	1.3	0.8	0.6	1.0	0.7	1.4	1.6	2.0
Count-Strength-Product	2269	2023	1752	2329	1934	1747	2350	2126	1942
CV% of CSP	1.5	2.2	2.2	2.2	2.8	2.6	3.1	3.0	2.4
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	13.81	12.31	11.79	14.11	12.33	11.32	15.77	13.97	13.74
Mean Strength (g)	817	328	230	833	332	225	552	365	272
CV% of Break	7.6	8.3	9.4	8.2	9.4	10.8	11.5	13.2	13.1
Elongation (%)	7.12	5.99	5.39	7.52	6.40	6.31	6.35	6.32	6.01
CV% of Elongation	6.2	7.6	8.7	6.0	7.5	7.8	12.0	9.8	9.2
Spec. Work of Rupture (g/tex)	0.541	0.406	0.341	0.586	0.424	0.370	0.506	0.442	0.409
CV% of Work of Rupture	12.5	14.6	16.8	12.5	14.9	16.8	19.1	19.3	19.3
Initial Modulus (g/tex)	273	308	319	247	208	156	286	243	283
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	13.85	14.88	17.21	13.46	14.42	16.22	19.51	21.30	23.88
Thin Places/1,000 yds	2	24	127	3	17	79	238	460	911
Thick Places/1,000 yds	80	60	191	135	48	123	481	870	1463
Neps/1,000 yds	102	113	628	172	86	522	112	200	493
Hair Count/100 yds	207	74	96	1084	377	241	662	507	1053
ASTM Yarn Grade	B	B	C	C+	B	C	C+	C	D+

## **TRAINING PROGRAM FOR STONEVILLE PEDIGREED SEED COMPANY**

We were pleased to conduct a two-day cotton training program for sales and research personnel of the Stoneville Pedigreed Seed Company on June 28 and 29. The program included presentations on the development of the cotton fiber, manual and instrument classing of cotton, the testing of cotton by instruments other than those used in HVI classing, and an introduction to textile processing. The processing discussions included carding, drawing, combing, roving, ring spinning and open-end spinning. Emphasis was placed on the importance of accurately measuring the fiber so that the information obtained can be used in selecting cottons for producing quality yarns and fabrics.

A good bit of time was spent in the fiber testing and processing laboratories at the International Center so the participants could relate the classroom lectures to actual processing. It was felt, however, that it might be even more helpful to see the processing of cotton all the way from the bale to finished fabric, and a visit to the ACG denim plant in Littlefield, Texas was made on the afternoon of the second day.

Stoneville employees who participated in the program were Don Threet, Gary Estis, Aubrey Germany, Jim Mitchell and Steve Miller, all of Stoneville, Mississippi; Delton Dearman, Monroe, Louisiana; Victor Sample, Hayti, Missouri; Jack Bean, Rainsville, Alabama; Jerry Seybert, Maricopa, Arizona; Jay Williams, Coolidge, Arizona; Calvin Bowlin, Greenwood, Mississippi; Wes Joost, Sugarland, Texas; John Fulcher, Collierville, Tennessee; and Neal Braswell, Albany, Georgia.

## **VISITORS**

Other visitors during June included Euli K. Schmid, Helmut Beuthien and Fred Spitzka, Rieter Corporation, Spartanburg, SC; Douglas Davis, Zantek, Georgetown, TX; C. Lee Collier, Bahnson, Parks & Cramer, Decatur, GA; Jack D. Gibbs, Greenville Machinery Corp., Greenville, SC; Lynne W. Scott, Baylor College of Medicine, Houston, TX; Roger Bolick, Allied Fibers, Hopewell, VA; John T. Childers and Seburn Crocker, Henkel Chemical Co., Charlotte, NC; George E. Petrides, Petrisco International Corp., Dover, NJ; Frank W. Morrison, Morrison Cattle Co., Pampa, TX; and Antonio Cardoso Fortes Calado, CITEVE de Portugal, Covilha, Portugal.

Also visiting were twelve representatives of the Texas Association of School Business Officials; and 44 participants in a senior citizens tour conducted by Perkiomen Tours & Travel of Pennsburg, PA.