



RESEARCH ON BARKY COTTON In recent issues of *Textile Topics* we have reported research on cottons that are discounted as a result of low micronaire or the presence of bark. We mentioned in the July 1983 issue (Vol. XI, No. 11) that bark (pieces of the exterior surface of the cotton plant) is not found in cotton from all areas, but is sometimes present when the fiber is harvested by high production machines. It is difficult to predict when a crop will contain a significant amount of this foreign material. In 1971, 68% of the cotton produced in the Lubbock area was discounted at least one grade because of bark, while in 1977 only 1% of the harvest was affected in this way. An example of the extent of the loss in value due to bark is revealed in a report on the 1981 Texas High Plains crop. There were 3.5 million bales harvested that year, 64% of which were reduced because of the presence of bark. Without knowing the exact reduction by the USDA classing office, the loss to the cotton producers could be estimated between \$25 million and \$40 million. Such a sizeable loss is an important matter to the producers of this cotton.

In the September 1983 issue of *Topics* (Vol. XII, No. 1), we presented spinning results from a research program in which eight lots of cotton were paired so that fiber properties were as nearly the same as possible, the only major difference being the presence or absence of bark. The report included fiber evaluation, spinning performance and yarn testing results from ring spinning only. We stated that we would report on open-end spinning in this issue.

So that our readers can have a thorough understanding of the cottons utilized and the significance of bark, we are reproducing one of the tables carried last month. This identifies the cottons used.

Test Number	Lot Number	Description	Shirley Analyzer Non-Lint Percent	
			Bale Sample	Card Sliver
A	1	No Bark	1.4%	0.3%
	3	Barky	2.4%	0.6%
B	4	No Bark	2.5%	0.6%
	2	Barky	4.6%	1.0%
C	5	No Bark	3.8%	0.6%
	7	Barky	2.2%	0.8%
D	8	No Bark	4.0%	0.9%
	6	Barky	6.2%	1.1%

The tables on the following pages give fiber properties, yarn testing results and open-end spinning performance of the eight lots. Fiber data are the same as given last month, for the same cottons were used in both ring and open-end spinning.

In studying these tables, it will be seen that the ends down/thousand pounds of yarn for the cottons with bark exceeded the number of broken ends for the lots with no bark, except in the comparison of Lots 5 and 7 (Test C). For both the 6/1 and 22/1 yarns, Lot 7 with bark had fewer ends down than did Lot 5 which had no bark. The number of broken ends for the 22/1 yarn -- from lots with and without bark -- indicates that this yarn may have been too fine for the cotton used, regardless of whether bark was present or absent. The best spinning performance of 22/1 resulted from Lot 1 (without bark) which had 110.7 broken ends/thousand pounds of yarn. The worst was Lot 6 (high non-lint content and bark)

TEST A

Fiber Data				
	Lot 1 (No Bark)		Lot 3 (Barky)	
USDA Length (inches)	1-1/32		1-1/32	
USDA Grade	SM Lt Spt (22)		M Lt Spt (32)	
USDA Micronaire	4.4		4.4	
1983 Loan Rate	53.85 cents/lb		52.95 cents/lb	
<u>MCI High Volume Testing Results (TRC)</u>				
Length (inches)	1.00		1.00	
Length Uniformity (%)	82.0		82.0	
Micronaire	4.5		4.2	
Strength (g/tex)	25.4		22.7	
Elongation (%)	7.3		7.3	
Yarn Data				
Rotor-Spinning Machine Used	Rieter M1/1			
Rotor Speed (rpm)	55,000			
Nominal Yarn Number (N _e)	6/1	22/1	6/1	22/1
Nominal Twist Multiplier	4.78	4.00	4.78	4.00
Actual Yarn Number (N _e)	5.94	21.99	6.04	22.42
CV% of Yarn Number	1.1	1.2	1.3	1.5
Skein Strength (lbs)	407	81	390	81
CV% of Strength	1.9	3.0	2.0	3.1
Count-Strength-Product	2418	1781	2356	1816
CV% of CSP	1.6	2.6	1.6	2.1
Single Yarn Tenacity (g/tex)	13.16	11.60	13.16	11.43
Mean Strength (g)	1301	318	1249	302
CV% of Break	6.4	9.6	8.0	9.8
Elongation (%)	8.6	6.3	7.9	6.2
Uster Non-Uniformity (CV%)	14.29	17.61	14.98	18.21
Thin Places/1,000 yds	5	131	8	213
Thick Places/1,000 yds	71	249	82	367
Neps/1,000 yds	49	344	86	551
Hair Count/100 yds	535	254	534	360
ASTM Yarn Grade	B	B	A	B+
Spinning Ends Down/1,000 lbs of yarn	2.7	110.7	13.4	347.8
Dust Study (Elitex BD 200M)				
Total Dust Deposit (mg/kg of yarn)(10/1 N _e)	18.48		28.16	

with 2885 ends down. It is doubtful that very many textile manufacturers would want such an excessive number of ends down, even with the latest machines that are equipped with automatic piecing devices.

Although Lot 6 gave the poorest spinning performance (also the case at ring spinning), the yarns produced from this lot had good strength and the highest break factors (CSP) in this program. We are at a loss to explain this, for the fiber in this lot was slightly less than one inch in length and had only average strength.

In addition to spinning yarns on the Rieter M1/1, dust studies were conducted on all lots using the Elitex BD 200M. The results of this are given at the end of each table. It will be noticed that the dust accumulation for the barky cottons was greater in all cases than for the paired cottons without bark. However, even with some degree of bark, Lots 3 and 7 did not have an excessive amount of dust deposited in the rotors.

The results presented here complete the report on fiber testing, spinning performance and yarn quality for Phase I of this study. The yarns have been woven into fabric and results of fabric testing will be carried in a future issue of *Textile Topics*.

TEST B

Fiber Data				
	Lot 4 (No Bark)		Lot 2 (Barky)	
USDA Length (inches)	1-1/32		1-1/32	
USDA Grade	SLM Lt Spt (42)		LM Lt Spt (52)	
USDA Micronaire	4.4		4.4	
1983 Loan Rate	49.45 cents/lb		43.75 cents/lb	
MCI High Volume Testing Results (TRC)				
Length (inches)	1.02		1.01	
Length Uniformity (%)	80.0		80.0	
Micronaire	4.4		4.3	
Strength (g/tex)	25.9		26.3	
Elongation (%)	7.0		6.7	
Yarn Data				
Rotor-Spinning Machine Used	Rieter M1/1			
Rotor Speed (rpm)	55,000			
Nominal Yarn Number (N_e)	6/1	22/1	6/1	22/1
Nominal Twist Multiplier	4.78	4.00	4.78	4.00
Actual Yarn Number (N_e)	5.89	21.56	6.02	22.34
CV% of Yarn Number	1.0	1.2	1.8	1.2
Skein Strength (lbs)	402	83	402	80
CV% of Strength	1.9	2.7	1.9	3.0
Count-Strength-Product	2368	1789	2420	1787
CV% of CSP	1.7	2.1	1.7	2.6
Single Yarn Tenacity (g/tex)	12.99	10.97	13.13	11.00
Mean Strength (g)	1318	298	1307	294
CV% of Break	6.6	9.1	6.9	9.5
Elongation (%)	7.8	6.2	7.7	5.5
Uster Non-Uniformity (CV%)	14.83	17.28	14.08	17.46
Thin Places/1,000 yds	12	104	3	114
Thick Places/1,000 yds	68	248	63	267
Neps/1,000 yds	65	330	48	450
Hair Count/100 yds	510	317	556	255
ASTM Yarn Grade	B	B	B	B
Spinning Ends Down/1,000 lbs of yarn	10.7	332.0	16.1	537.5
Dust Study (Elitex BD 200M)				
Total Dust Deposit (mg/kg of yarn)(10/1 N_e)	7.14		373.6	

TEXTILE DEPARTMENT STUDENT ACTIVITIES Several members of the Texas Tech Kappa Chapter of Phi Psi Fraternity attended the 77th Phi Psi Convention hosted by Lambda Chapter of Auburn University in Panama City, Florida. During the convention chapters from Auburn University, Georgia Tech, Clemson University, Philadelphia College of Textiles and Science, North Carolina State University, Southeastern Massachusetts University, the Institute of Textile Technology and Texas Tech University entered three divisions of competition (oral presentations, written reports and photographic archives) based on each chapter's activities during the past year.

Kappa Chapter is justifiably proud of winning first place in all three divisions. To our knowledge, this is the first time any one chapter has taken all first place awards. We congratulate Kappa Chapter for this achievement.

Members attending from Kappa Chapter were Twila Braun, Karen Hansen, Victor Landin, Joe Don Long, Anita Montgomery, Mary Ann Owen and Andrew Talbott. Accompanying the group were Phi Psi West members Robert Hale, 1st Vice President of Grand Council; Kay Caddel, Advisor and Grand Council Secretary; David Davis and Mike Grunder.

TEST C

Fiber Data				
	Lot 5 (No Bark)		Lot 7 (Barky)	
USDA Length (inches)	1-1/32		1-1/32	
USDA Grade	M Lt Spt (32)		SLM Lt Spt (42)	
USDA Micronaire	4.3		4.4	
1983 Loan Rate	52.95 cents/lb		49.45 cents/lb	
<u>MCI High Volume Testing Results (TRC)</u>				
Length (inches)	1.01		1.02	
Length Uniformity (%)	81.0		82.0	
Micronaire	4.4		4.5	
Strength (g/tex)	25.1		25.0	
Elongation (%)	6.8		6.8	
Yarn Data				
Rotor-Spinning Machine Used	Rieter M1/1			
Rotor Speed (rpm)	55,000			
Nominal Yarn Number (N _e)	6/1	22/1	6/1	22/1
Nominal Twist Multiplier	4.78	4.00	4.78	4.00
Actual Yarn Number (N _e)	6.00	22.40	6.02	22.40
CV% of Yarn Number	1.2	0.9	1.5	1.5
Skein Strength (lbs)	398	77	386	76
CV% of Strength	2.3	2.8	2.6	3.4
Count-Strength-Product	2388	1725	2324	1702
CV% of CSP	1.9	2.7	2.4	2.8
Single Yarn Tenacity (g/tex)	13.45	11.06	12.91	10.72
Mean Strength (g)	1345	280	1274	283
CV% of Break	7.4	8.9	7.1	10.2
Elongation (%)	8.2	5.6	7.8	5.5
Uster Non-Uniformity (CV%)	14.72	17.50	14.38	17.44
Thin Places/1,000 yds	5	105	3	106
Thick Places/1,000 yds	97	300	59	265
Neps/1,000 yds	95	498	59	371
Hair Count/100 yds	513	309	486	226
ASTM Yarn Grade	C+	B	B	C+
Spinning Ends Down/1,000 lbs of yarn	13.4	648.2	2.7	379.4
Dust Study (Elitex BD 200M)				
Total Dust Deposit (mg/kg of yarn)/(10/1 N _e)	36.24		40.70	

Educational events during the convention included a trip to Monsanto Textiles Co. in Pensacola, Florida and presentations by Mike Hopp, Milliken & Company; Rodney Fuller, WestPoint Pepperell; and Terry Martin, Burlington Industries.

STUDENT HONORS We are always pleased when we can recognize students in Texas Tech's Department of Textile Engineering for outstanding scholastic achievement. We are proud to announce that sophomore Keith Soechting of New Braunfels, Texas; juniors Sohail Barlas of Sialkot, Pakistan and Chetankamur Patel of Ndole, Zambia; and recent graduate Jane Kveton of Abernathy, Texas were named to the National Dean's List which is published by Educational Communications, Inc. of Lake Forest, Illinois. The National Dean's List is regarded as the leading U. S. publication for recognizing outstanding college students.

These students were nominated by Fred P. Wagner, Jr., Associate Dean of Engineering at Texas Tech University, based on grade point average and inclusion on the Engineering Dean's Honor List. (A fifth student, senior Karen Hansen of Mercedes, Texas, was apparently inadvertently omitted from the publi-

TEST D

Fiber Data				
	Lot 8 (No Bark)		Lot 6 (Barky)	
USDA Length (inches)	1-1/32		1-1/32	
USDA Grade	LM Lt Spt (52)		BG (82)	
USDA Micronaire	4.3		4.3	
1983 Loan Rate	43.75 cents/lb		N/A	
MCI High Volume Testing Results (TRC)				
Length (inches)	0.98		0.98	
Length Uniformity (%)	81.0		82.0	
Micronaire	4.3		4.2	
Strength (g/tex)	26.7		24.9	
Elongation (%)	7.1		6.9	
Yarn Data				
Rotor-Spinning Machine Used	Rieter M1/1			
Rotor Speed (rpm)	55,000			
Nominal Yarn Number (N _e)	6/1	22/1	6/1	22/1
Nominal Twist Multiplier	4.78	4.00	4.78	4.00
Actual Yarn Number (N _e)	5.89	21.44	5.95	22.21
CV% of Yarn Number	1.3	1.3	1.4	1.3
Skein Strength (lbs)	410	83	410	83
CV% of Strength	2.2	3.2	2.9	3.4
Count-Strength-Product	2415	1780	2440	1843
CV% of CSP	1.6	2.5	2.4	2.8
Single Yarn Tenacity (g/tex)	14.09	11.55	13.77	11.49
Mean Strength (g)	1443	322	1362	301
CV% of Break	7.2	8.2	7.0	9.7
Elongation (%)	9.0	6.4	8.3	6.0
Uster Non-Uniformity (CV%)	15.36	17.34	14.34	17.74
Thin Places/1,000 yds	18	121	6	164
Thick Places/1,000 yds	98	298	74	309
Neps/1,000 yds	81	434	78	481
Hair Count/100 yds	558	252	604	255
ASTM Yarn Grade	C+	B+	B	C+
Spinning Ends Down/1,000 lbs of yarn	5.4	252.9	19.5	2885.0
Dust Study (Elitex BD 200M)				
Total Dust Deposit (mg/kg of yarn)(10/1 N _e)	35.71		115.1	

cation, for she was included on the Engineering Dean's Honor List.) We congratulate these students on receiving this honor, which brings recognition not only to themselves, but also to the Department of Textile Engineering at Texas Tech University.

VISITORS Visitors to the Textile Research Center during October included 21 executives from textile organizations in Taiwan, The Philippines, Malaysia, Hong Kong, Republic of Korea, Thailand, Japan, Bangladesh and Indonesia. They came to the Center as part of the Cotton Orientation Tour sponsored by Cotton Council International and the USDA's Foreign Agricultural Service. The group was accompanied by personnel of the National Cotton Council, Cotton Council International, USDA-FAS and USDA-AMS.

Other visitors included Toni Fant, WestPoint Pepperell, West Point, GA; Richard Dunn and Mike Allred, John D. Hollingsworth on Wheels, Inc., Greenville, SC; John T. Moss, Ring Around Products Inc., Dallas, TX; Jorge L. G. Alonso, Juan Paul and Javier Gamboa, Alpargatas S.A.I.C., Buenos Aires, Argentina; Abdul-Ghafoor Ahmad, University of Karachi, Karachi, Pakistan; Jose Miguel Zaldo, Algodonera de San Antonio, Bergara, Spain; Jesus Igartua, TAVESA, Bergara, Spain; Mahmoud A. H. Shokry, Ministry of

Agriculture, Cairo, Egypt; D. B. M. Sallouma, A. M. El-Shinnawy, J. A. El-Kersh, A. E. El-Ganainy and M. A. El-Gharbawy, Cotton Research Institute, Giza, Egypt; and K. J. Choi, Platt Samwhan Sales Co. Ltd., Seoul, Republic of Korea.

HOLIDAY CLOSING The Textile Research Center will be closed from December 22, 1983 through January 1, 1984 so that our employees may enjoy the Christmas and New Year holidays with their families. We extend our best wishes for the holiday season to our friends everywhere.