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IN SEARCH OF PROMPTITUDE

As we prepare this issue of *Textile Topics*, we are reminded of a news item which told that the American Procrastination Society had planned an annual convention but repeatedly postponed the date and never had the meeting at all. Our problem with *Topics*, however, has not been caused so much by procrastination as it has been by preparing budgets and research reports, and travelling more than normal. All this has affected our publishing schedule.

Perhaps no one else has noticed we are late. However, **we** have noticed and are concerned that in late May we are just preparing the March issue. We apologize for the delay and hope the following report will be of such interest that you will overlook our tardiness.

SHORT WOOL ON THE COTTON SYSTEM

In past issues of *Topics* we have reported the use of wool on the cotton system of spinning. Our primary interest in this has been the utilization of short Texas wool, shorn after approximately six months of growth. Blending 20% to 30% of this with Texas cotton has led to the development of a unique fabric we call TEXCELLANA. Previous articles on this were carried in the October 1984, July 1985, May 1986, September 1987 and August 1989 issues of *Textile Topics*.

An additional project on the cotton/wool blend was conducted recently for the Texas Food and Fiber Commission (formerly the Natural Fibers & Food Protein Commission of Texas). The objectives of this study were to determine the practical spinning specifications for the production of yarns made from 80% cotton and 20% wool, and to compare the processibility of short Texas wool with the more expensive combed/cut wool. This project used both types of wool and blended them with cotton for ring and rotor spinning. Additionally, the study included a comparison of blending the two fibers intimately at the beginning of processing and at drawing. The information presented here is taken from the report prepared by John B. Price, ICTRD assistant director, for the Texas Food and Fiber Commission.

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Both the Texas short wool and the combed/cut wool were 64's grade. The Texas wool had an upper quartile length of 1.4 inches, while the combed top was cut to 1.5 inches. Fiber properties of the cotton used are given in Table III (page 3).

Our use of short wool with cotton has shown that the two fibers can be blended intimately and carried through a normal procedure in the same manner that would be followed for 100% cotton. Prior to ring spinning, standard drafts and speeds at two processes of drawing and roving were the same as those used for cotton. At spinning, however, it was learned that as the break draft increases, yarn strength decreases and the yarn becomes more irregular. The increase in non-uniformity is particularly apparent in terms of frequency of thin places. It was observed that the quality of the cotton influenced yarn quality much as it would when spinning this fiber in 100% form. The quality of the wool seemed to have little effect on the yarn, most likely because the percentage of wool in the blend was relatively low.

This program included the spinning of three yarn numbers, N_e 16, 22 and 24, but because of space limitations, we are presenting N_e 16 data only. It will be seen that the N_e 16 yarn was produced from both the combed/cut and Texas short wools, from intimate and drawing frame blends, and on ring and rotor machines. The spinning machines used were a standard Saco Lowell SF-3H ring frame and a Seussen Spintester equipped with 66 mm rotors which were run at 40,000 rpm. Yarns were successfully spun on the Spintester using smooth and four-grooved navels, while the eight-grooved navel was found to be too aggressive and generally unsatisfactory. It will be noticed in Table III that the duration of spinning on the rotor machine was quite limited, only sufficient to produce yarns for testing.

For ring spinning, slivers from intimate and drawframe blends were reduced to 1.5 hank roving and were then double-creeled and spun to N_e 16 yarn with a 3.6 twist multiplier (Table I, next page). The yarn from the intimate blend was found to be slightly

TABLE I

RING SPINNING TRIAL RESULTS

80% Cotton (B/N 1824) / 20% Short-shorn Wool		
Blend	Intimate	Drawframe
Roving	1.50/2 hank	
Machine	Saco Lowell SF-3H	
Nominal Yarn No. (N_e)	16	
Ring Diameter (in)	2.0	
Spindle Speed (rpm)	7500	
Traveller	10	
Draft (break)	1.77	
Draft (total)	22.2	
Twist Multiplier (α_e)	3.6	
Yarn Speed (yd/min)	14.3	
Ambient Conditions	72°F/55% RH	
Yarn Properties		
Skein Test:		
Yarn No. (N_e)	16.17	15.85
Count-Strength-Product	2138	2114
Single Yarn Tensile Test:		
Tenacity (g/tex)	---	---
Mean Strength (g)	---	---
Elongation (%)	---	---
Uster Evenness Test:		
Non-Uniformity (CV%)	17.56	17.68
Thin Places/1,000 yds	39	35
Thick Places/1,000 yds	439	375
Neps/1,000 yds	178	159
Hairs/100 yds	1568	1029
ASTM Yarn Grade	B	B+

TABLE II

RING SPINNING TRIAL RESULTS

	80% Cotton (B/N 1824)/ 20% Short-shorn Wool		80% Cotton (B/N 1824)/ 20% Combed/Cut Top	
Blend	Intimate			
Roving	2.00/2 hank			
Machine	Saco Lowell SF-3H			
Nominal Yarn No. (N_e)	16			
Ring Diameter (in)	2.0			
Spindle Speed (rpm)	8365			
Traveller	#9			
Draft (break)	1.96	2.25	1.96	2.25
Draft (total)	22.2		22.2	
Twist Multiplier (α_e)	3.7			
Yarn Speed (yd/min)	15.7			
Ambient Conditions	72°F/55% RH			
Yarn Properties				
Skein Test:				
Yarn Number (N_e)	16.02	16.05	16.06	16.15
Count-Strength-Product	2174	2034	2187	2083
Single Yarn Tensile Test:				
Tenacity (g/tex)	13.79	14.19	14.11	14.10
Mean Strength (g)	508	522	418	515
Elongation (%)	5.58	5.65	5.52	5.40
Uster Evenness Test:				
Non-Uniformity (CV%)	20.97	21.74	19.22	20.32
Thin Places/1,000 yds	247	402	169	285
Thick Places/1,000 yds	649	742	511	535
Neps/1,000 yds	238	266	248	258
Hairs/100 yds	1792	1304	2271	1048
ASTM Yarn Grade	C+	C	B	C+

stronger and more regular, but with a higher level of hairiness than that spun from the drawing frame blend. It can be seen in Table II that the same yarn number was spun to compare the performance of combed/cut wool with the short-shorn fiber. A further comparison of rotor-spun yarns can be made by examining Table III, which gives results of spinning the short-shorn wool on the Spintester.

We feel this most recent study has contributed to the information dealing with blending cotton and wool. The conclusions drawn from this are:

1. The drawframe blend of 80% cotton and 20% short-shorn wool produced yarns that were slightly weaker and less even than their intimately blended counterparts.
2. At ring spinning, yarn spun from single-creeled roving was inferior in quality to that produced from double creeling.
3. Yarn quality deteriorated with increased break draft.
4. In spite of the low percentage of wool in the blend, the combed/cut fiber gave more regular yarns, particularly when finer yarns were spun, than did the short-shorn wool.
5. For coarse yarns produced with a low percentage of wool, there was found to be only a slight advantage gained in yarn quality by the use of the more expensive combed/cut wool.
6. Yarns spun on the rotor machine exhibited very little difference in properties, whether produced on smooth or grooved navels. However, rougher navels produced yarns with a higher hairiness level but supported spinning at lower twist multipliers.
7. It seems unlikely that the use of combed/cut wool would provide any significant improvement over short-shorn wool when used in small proportions and spun into rotor yarns.

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We would like to express our appreciation to the Texas Food and Fiber Commission for sponsoring this research and for permitting the publication of this information.

DAVISON PUBLISHING DONATES BLUE BOOKS

The Davison Publishing Company of Ridgewood, New Jersey recently donated a supply of their Blue Book to students, faculty and staff of Texas Tech University's International Center for Textile Research. This book, a directory of textile manufacturers and related companies in the United States and other countries, is used extensively by virtually everyone associated with textiles. It is a useful source of information and is especially helpful to university students and graduates as they begin careers in industry.

We are grateful to Davison Publishing Company for their generosity in making this contribution.

TABLE III

ROTOR SPINNING TRIALS

80% Cotton (B/N 1824) / 20% Short-shorn Wool			
Cotton Fiber Properties (HVI):			
Tensile: Strength (g/tex)	28.5		
Elongation (%)	5.63		
Length: Length (in)	1.18		
Uniformity Ratio (%)	82.5		
Micronaire	3.9		
Leaf	20		
Reflectance	78.8		
Hunter's +b	7.75		
Sliver	55 gr/yd Finisher Drawn		
Machine	Suessen Spintester		
Nominal Yarn No. (N_e)	16		
Rotor Type	66 YS		
Rotor Speed (rpm)	40000		
Opening Roller Type	OS32		
Opening Roller speed (rpm)	5500		
Draft	112		
Twist Multiplier (α_e)	3.75	4.00	4.25
Yarn speed (yd/min)	74	70	66
Navel	Smooth		
Ambient Conditions	72°F/56% RH		
Test Duration (min)	11	12	13
Yarn Properties			
Skein Test:			
Yarn Number (N_e)	15.87	15.91	15.86
CV% of Count	1.3	1.6	1.6
Count-Strength-Product	1172	1183	1262
CV% of CSP	0.7	1.9	1.2
Single Yarn Tensile Test:			
Tenacity (g/tex)	8.28	8.16	8.73
Mean Strength (g)	308	303	325
CV% of Strength	9.5	12.4	9.4
Elongation (%)	6.05	6.53	6.78
CV% of Elongation	8.9	8.6	7.8
Spec. Work Rupture (g/tex)	0.276	0.291	0.315
CV% of Work of Rupture	17.8	18.7	16.7
Initial Modulus (g/tex)	214	147	166
Uster Evenness Test:			
Non-Uniformity (CV%)	16.39	16.69	16.58
Thin Places/1,000 yds	68	58	60
Thick Places/1,000 yds	192	154	156
Neps/1,000 yds	346	386	424
Hairs/100 yds	629	580	562
Performance:			
Number of Breaks	1	0	0

TEXTUBE CORPORATION CONTRIBUTION

The Textube Corporation of Greer, South Carolina recently contributed two cases of plastic cones to the International Center for use in education and research. These cones will be used on our automated rotor spinning machines. As our activities have increased, the need for supplies of this type has become more critical, and this sort of assistance is always helpful.

We want to express our gratitude to the Textube Corporation for their consideration in helping us with our activities in this way.

VISITORS

March visitors to the International Center included Vance Proctor, Bronco Seed Co., Stamford, TX; Hal Brockman, Cotton Incorporated, Raleigh, NC; Carl Cox, Texas Food and Fiber Commission, Dallas, TX; William H. Jewell, Picanol of America, Greenville, SC; Bill Wright, Jr. and Lanny T. Kinsler, Hollingsworth, Greenville, SC; Jack D. Gibbs, Greenville Machinery Corp., Greer, SC; Jim Mahorney, Geological Data Services, Midland, TX; Lawrence J. Hahn, Midland, TX; A. Richard Horrocks, Bolton Institute of Higher Education, Bolton, England; Jose Jiminez Yaque, Consolidated HGM Corp., Seville, Spain; Francisco del Viejo Quintana, Cooperativa Provincial Agricola, Seville, Spain; and Manuel Alvarez Carmona, Merco Oleaginosas y Algodon, Taracon, Spain.

Also visiting the Center were 46 high school representatives of the Amarillo Region Future Homemakers of America; 15 students from Lubbock Christian University; 19 Lubbock-area high school students; and 46 pupils from the Amarillo Montessori Academy, Amarillo, TX.

TEXAS INTERNATIONAL COTTON SCHOOL

In its first year of operation, the Texas International Cotton School enrolled more than fifty students from sixteen countries. These attended the two sessions that were held October 9 - 27, 1989 and January 15 - February 2, 1990. The next classes are scheduled for October 1990 and April 1991. Directors of the School expect high interest and good attendance to continue.

Texas Tech University's International Center for Textile Research and Development, Texas A&M University's Research and Extension Service, and the Lubbock Cotton Exchange provide instructors for the School. Additionally, guest lecturers are Dr. Tom Bell, Director of economic and marketing research for Continental Grain Company and Joseph J. O'Neill, President and Chief Operating Officer of the New York Cotton Exchange. The instructors and guest speakers present an intensive study of High Volume Instrument classing of cotton and application of the resulting data to marketing and textile processing.

More information about the Texas International Cotton School can be obtained by contacting the Lubbock Cotton Exchange at 1517 Texas Avenue, Lubbock, Texas 79401. The telephone number is 806/763-4646; Fax number is 806/763-8647.