



RESEARCH ON TANDEM CARDING: PART IV

This issue of *Textile Topics* presents the final part of our report on tandem carding. We have suggested that our readers retain the sections of

of this report in serial order. If there are any who have not received a previous section, we ask that you write and request it to be sent if you wish to have it.

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6. Assessment of Dust in Sliver

Excess finisher drawframe sliver from each carding treatment was used to provide data regarding the dust remaining within the cotton. In this test, yarn was spun for a fixed period of time on a specific number of rotors of an Elitex BD 200M rotor spinning machine, an early design which had no trash extraction system. At the end of four hours running time, the machine was stopped and the detritus carefully collected from the rotor groove separately from that which gathered around the ledge housing the air pumping holes in the rotor. The deposits were weighed and expressed in terms of the weight of yarn spun.

The results are shown in Figure XIV. Pima cotton gave the highest groove deposit followed by Texas, California and, finally, Delta cotton. Tandem-carded stock always provided cleaner rotor grooves which probably explains why there was less deterioration in yarn quality with duration of spinning.

This implies that Tandem carding will permit the use of those rotors whose geometry maximises yarn quality yet are prone to loading and, therefore, loss of product quality with time.

7. The Extract From The Spinning Machine

The waste material ejected from the opening roller housing is collected upon a filter screen in the spinning machine. When the spinning evaluation of each carding treatment of each cotton was completed, the screen was cleaned and a sample collected.

Inspection of the samples showed that the nature of the collected material varied according to the type of cotton and the carding treatment. . . . the extract from single-carded sliver tended to be more "granular" in appearance, whereas the waste from Tandem-carded sliver was more fibrous.

The extracted material contained fragments of trash and seed coat-like particles which could often be found in the tails of yarns immediately after a spinning interruption. Since no cleaning process has perfect efficiency, it may be argued that the nature of the extracted material is indicative of the trash which survives into the spinning chamber and possibly interrupts the spinning process. The differences observed in the waste collected from the filter, therefore, demonstrate the cleanliness of Tandem-carded sliver and provide . . . explanation of the consequent reduction in the spinning breakage rate by the use of such feedstock.

FIGURE XIV: TABLE OF DUST STUDY RESULTS

Cotton	Card	Rotor Deposit (mg/kg)		
		Ledge	Groove	Total
California	Single	20.8	4.8	25.6
	Mk 1 Tandem	27.4	1.0	28.4
	Mk 4 Tandem	19.6	0.6	20.1
Delta	Single	35.8	1.2	36.9
	Mk 1 Tandem	37.8	0.6	38.4
	Mk 4 Tandem	29.8	0.8	30.6
Pima	Single	10.9	17.2	28.1
	Mk 1 Tandem	17.2	0.2	17.4
	Mk 4 Tandem	12.0	0.3	12.3
Texas	Single	38.3	9.2	47.5
	Mk 1 Tandem	37.1	1.4	38.5
	Mk 4 Tandem	36.5	0.8	37.3

8. Conclusions

- 8.1. The breakage rate incurred when rotor spinning from single-carded stock was always greater than that from Tandem-carded stock.
- 8.2. The improvement in spinning performance arose because Tandem carding was effective in removing material which was not cotton fiber. Spinning interruptions attributable to seed coat fragments, bark and shreds of polypropylene bagging were reduced to an insignificant number.

- 8.3. Finer yarns could be spun from Tandem-carded sliver as a result of the improved cleanliness.
- 8.4. Tandem cards extracted more dust from the cotton, permitting yarns to be spun for longer periods without significant deterioration in yarn quality, particularly yarn strength.
- 8.5. Despite the likely deterioration in fiber length distribution characteristics with Tandem carding, there were no noteworthy reductions in yarn quality compared to yarns spun from single-carded stock.
- 8.6. There were no significant differences in either rotor spinning performance or yarn quality between the products of the two Tandem cards, but it should be noted that the Mark 1 Tandem card's production rate was 75 lb/hr (34 kg/hr) whereas that of the Mark 4 Tandem card was 110 lb/hr (50 kg/hr).

9. Reference

- 9.1. Textile Research Center Report, "The Suitability of Certain American Cottons for the Production of Fine Count Rotor-Spun Yarns," January 1987. Research conducted for W. Schlafhorst, Mönchengladbach, West Germany and American Schlafhorst Company, Charlotte, North Carolina.

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This concludes the report on Tandem carding. This research was sponsored jointly by Crosrol Ltd. of Halifax, England and the Natural Fibers and Food Protein Commission of Texas. We thank both organizations for granting permission for us to publish the report in *Textile Topics*. We hope this has been of interest to our readers.

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TEXAS INTERNATIONAL COTTON SCHOOL

We mentioned in last month's *Topics* that we have been receiving an increasing number of requests for special training at the International Center. We pointed out that we conduct these courses when they are requested by fiber producers, textile companies, and government agencies in the United States and other countries.

During the past few months we have met several times with the directors of the Lubbock Cotton Exchange to discuss the possibility of creating a school that will offer instruction on evaluating cotton by high volume instruments (HVI), textile processing, and marketing. These meetings have led

to the creation of the **Texas International Cotton School**, designed to inform potential buyers of the quality of Texas cotton and to satisfy the increasing demand for more technical information about the use of HVI data.

Each class will be three weeks in duration and will be divided equally between cotton technology and marketing. The technology portion will deal with cotton classing by high volume instruments, the importance of the results obtained by these instruments, and how the results can be used to improve spinning efficiency and yarn quality. Instruction will also be offered in the technology of processing cotton from the bale to woven and knitted fabrics.

The marketing part of the course will include instruction on the futures market, hedging, invoicing, shipping, and other details of domestic and export markets. Additionally, those enrolled in the school will receive hands-on experience by visiting a number of marketing firms located in Lubbock.

The cotton testing and processing instruction will be conducted at the International Center for Textile Research and Development. New state-of-the-art instruments and machines are presently being installed, and these will be used in the courses offered school participants. In addition to the HVI equipment already located at the Center, a new Motion Control HVI 4000 System is being installed at the present time, and Spinlab of Knoxville, Tennessee will place their latest 900 System here prior to the opening of the School. Shirley Developments of Stockport, England is integrating new F/MT 3 fineness and maturity testers with the HVI units. This collection of electronic instruments will give the most complete evaluation of cotton that is currently attainable.

The installation of a number of new machines for cleaning, carding, and spinning has just been completed, and these will be available for use by students enrolled in the Cotton School. A new Rieter C-4 card and Crosrol Mark IV tandem card will be used in conjunction with late model rotor spinning machines that were put in operation earlier. All this equipment will be employed to demonstrate the correlation of cotton fiber properties with yarn quality and spinning efficiency.

The Lubbock Cotton Exchange has informed us that the first class will begin on October 9, 1989 and will continue through October 27. The second class is scheduled for January 15, 1990 through February 2. Those interested in obtaining more information and registration details about the Texas International Cotton School should contact the Lubbock Cotton

Exchange at:

Lubbock Cotton Exchange
1517 Texas Avenue
Lubbock, Texas 79401 U.S.A.
Telephone: 806/763-4646
Telefax: 806/763-8647.

We feel that a school of this type is long overdue, and we are pleased the Lubbock Cotton Exchange is sponsoring it. Having been involved in the planning, we are confident those enrolling will receive valuable information for purchasing and using Texas cotton.

1988 TEXAS COTTON QUALITY EVALUATION

We have recently completed an evaluation of the quality of the leading varieties of cotton produced in Texas during 1988. A report of this study has been prepared and is available to anyone interested. It can be obtained by sending your request to the address given on the back page of *Topics*.

Our evaluation included eighteen cottons purchased from various points in the state. All were established varieties that were produced in large quantities and were commercially available through marketing firms. The cottons were obtained from the Texas Coastal Bend area, the Rio Grande Valley, the El Paso area, the Rolling Plains, Central Texas and the High Plains of West Texas. We feel the report offers an excellent cross section of the varieties grown in Texas last year.

It may be remembered that the 1988 Texas crop was one of the largest ever produced. The twenty-five county High Plains area alone produced 3.1 million bales, virtually all of it high quality. In fact, the over-all quality was so high that some textile companies that normally purchase Strict Low Middling Light Spotted cotton have had difficulty in obtaining the quantity they need.

DONATIONS

We wish to thank Davison Publishing Co., Inc. of Ridgewood, New Jersey for their donation of a case of Davison's Textile Blue Book. These have been distributed among students studying with us. Such donations are appreciated and we are grateful for the generosity of Davison Publishing Co.

VISITORS

June visitors at the International Center included Peter F. Kandel, P. Kandel & Co., Dallas, TX; Cheryl Pink and Thompson Mayberry, Southwestern Public Service Co., Amarillo, TX; Herbert J. Wright and George Burch, Wright Fibers Inc., Dallas, TX; Harvey Campbell, Harvey Campbell and Associates, Bakersfield, CA; Roger Bolick, Allied Fibers, Hopewell Va; John T. Childers, Henkel Corporation, Charlotte, NC; Susan Kerr Landrum, Allied Fibers, Petersburg, VA; Judy Peters, Allied Fibers, New York, NY; Tom Reiser, Allied Fibers, Columbia, SC; Charles G. Tewksbury, Institute of Textile Technology, Charlottesville, VA; Robert Barnhart, North Carolina State University, Raleigh, NC; Mike T. Rodriguez, Schlafhorst Inc., Charlotte, NC; John Seth, Avanti Medical Group, Lewisville, TX; and Guisepppe M. Berselli, Ithen Cotton Co. Ltd., Milan, Italy.

Also, representatives of Cotton Council International brought a group of textile executives from Italy to the Center on June 9. Members of the group were Angelo Bartolucci, Gemona Manifatture SRL, Milan; Gianluigi Candiani, Tessitura Robecchetto Candiani (TRC), Milan; Marily Franzoni, Franzoni Filati S.p.A., Esine; Jacques Haessig, Zopfi Tessile S.p.A., Ranica; Davide Mara, Cotonificio Olcese-Veneziano, S.p.A., Milan; Antonio Meciani, Manifattura Rotondi S.p.A., Milan; Alessio Menegon, Industria Tessile E.G. Flli Berto S.p.A., Bovolenta; Giovanni Robba, Associazione Cotoniera Italiana, Milan; Gualtiero Sepati, Filati Filartex S.p.A., San Pancrazio; and interpreter Vittorio Felaco, Seabrook, MD. They were accompanied by Tom Bellamore and Bobbie Raiford, Cotton Council International, Reading, Berkshire, England; and Vaughn Jordan, Cotton Council International, Washington, DC.

In addition, 48 members of the Cotton Growers Warehouse Association; 67 area 4-H Club members; 55 elementary students; and 10 high school students toured the Center during the month.