



# TEXTILE TOPICS

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**SYMPOSIUM ON COTTON TESTING AND SPINNING TECHNOLOGY** In this October issue of *Textile Topics*, we are reporting on the cotton symposium held in Lubbock on November 17 & 18, 1987. The reason for this anachronism is that we are still behind with *Topics*, and we have decided to report on a matter that would seem not to have happened yet. We hope to get *Topics* back on schedule shortly.

The symposium on Recent Developments in Cotton Fiber Testing and Spinning Technology was attended by 217 persons. There may actually have been more, but we had 217 sign in at the registration desk. Most of those attending came from the Southeastern part of the United States, but 25 participants came from other countries. These were:

J. Baines, Altino Fortuna and John A. Innes, Sao Paulo Alpargatas S.A., Sao Paulo, Brazil; Albert J. W. Bote, Baumwoll-Kommissionen und Lagerhauser GmbH, Bremen, West Germany; Alberto Cabo and Alvaro Hernandez, Federacion Nacional de Algodoneros, Colombia; Harry Cripps, Crosrol Ltd., Halifax, England; Russell J. Crompton, Shirley Developments Ltd., Manchester, England; A. Ellis, Technikon Natal, Durban, South Africa; Graciela Gomez, Instituto Agronomico Nacional, Caacupe, Paraguay; M. Justin Gutknecht, Institut de Recherches du Coton et des Textiles Exotiques, Montpellier, France; Luis Herrera, Cenalgodon, Colombia; Richard Ihns, Jr., Fabrica de Rendas ARP, S/A, Nova Frigurgo, Brazil; Ross Keeley, Colly Farms Limited, Collarenebri, NSW, Australia; Arthur Klimes, Dominion Textile Inc., Montreal, Canada; Hans W. Krause, Swiss Federal Institute of Technology, Zurich, Switzerland; Edmondo Levante, Fintrading Ltd., Milan, Italy; Pedro Maeda, Edson Maeda and Mario Matsubara, Maeda Group, Brazil; Michael Muller, Siegfried Peyer AG, Wollerau, Switzerland; Alfonso Pineiri, Indugraco, Colombia; Alfred Prieto, Italgodon, Bogota, Colombia; Chris Salcedo, A. Hannay & Co., Ltd., Liverpool, England; and Norbert Stuhlfauth, Heinrich Otto/Fils-Textile GmbH, Reichenbach/Fils, West Germany.

In addition to the technical sessions of the symposium, the afternoons were spent away from the convention hall to visit cotton harvesting and ginning and to tour the ACG Textile Division of the Plains Cotton Cooperative Association. On the afternoon of Nov. 17, visits were made to the Don Bell farm, the Wolfforth Farmers Gin, and the USDA Lubbock classing office. These locations seemed to be of considerable interest to the symposium participants. The photographs on the next page give an indication of their desire to see cotton harvesting, module building and ginning. The following afternoon, Nov. 18, was spent at the ACG Textile Plant in Littlefield, where first-quality denim is produced from West Texas cotton.

We would like to express our special thanks to Don Bell for hosting and directing the trip to his farm and the Wolfforth Gin. His explanations of the various operations were most helpful for gaining a better understanding of what happens to the cotton between the field and the mill. We appreciate the hospitality and courtesy of Wendell Wilbanks and the staff of the USDA classing office for allowing us to tour their facility at an especially busy time. Also, we thank Bob Hale, Autry Moore, and their staff at the ACG Textile Plant for permitting us to visit with them.

Many of those who attended the symposium have inquired about copies of the presentations made. We did not require speakers to submit written papers. However, we are pleased that Mr. Ken Porter of the Barnett Cotton Company recorded the meeting on videotape. For convenience and to keep the cost down, the seminar presentations have been copied onto one six-hour cassette. This may be ordered at a charge of \$45.00. Please contact Harriet Boone at the address given on the *Topics* return address label. Checks should be made payable to the TEXTILE RESEARCH SYMPOSIUM. **Please note this videotape can be used only with United States VHS systems. If you have a US-type VHS system, we will be happy to send a cassette at your request, but we would not want to send something you cannot use.**

A number of those attending inquired about our next meeting. As we have stated before, we do not

conduct symposia like this on a regular basis, but only when we feel there is information on a given subject that is of interest to fiber producers, marketing firms and textile manufacturers. In general, we sponsor these every two or three years.

We thank all who attended the symposium for their support and interest. We especially want to express our appreciation to the speakers who made such excellent presentations.



Symposium participants observe a cotton stripper in action during the visit to the Don Bell Farm

Module storage of cotton at the gin was an interesting observation for many who had not seen this before



An explanation of the ginning process is given to symposium participants touring the Wolfforth Farmers Gin

**RESEARCH ON COTTON FIBER FINENESS AND MATURITY** One of the more interesting subjects discussed during the symposium was the relationship between cotton fiber fineness and maturity. While it was generally agreed that in American upland cottons micronaire does correlate well with maturity, there may be some cases where a cotton can be fine with a low micronaire value, but still be mature. H. H. Ramey, Jr. and John Gannaway both pointed this out in their presentations. Considering this, it would seem to be of more value to place emphasis on fineness rather than micronaire when evaluating the properties of cotton for use at rotor spinning. We have found in our research that it is better to have a fine, mature fiber in a yarn than a low micronaire cotton that is immature.

During 1986, the Textile Research Center conducted a study of cotton fiber maturity and fineness for the Natural Fibers & Food Protein Commission of Texas (NFFPC). The results of that research were included in TRC's annual report to NFFPC for that year, and because of the recent interest shown in these fiber properties, we thought it might be worthwhile to reprint a portion of the report in this issue of *Topics*. We will not attempt to give the full report, for it is too extensive for the few pages we have here. However, we plan to carry the introductory part in this issue and give the conclusions in a subsequent issue.

In the overall research program, a series of studies was made to demonstrate the value of the IIC/Shirley F/MT data on fineness and percent mature fibers. These studies were conducted on 36 cottons grown primarily in Texas and used in one of

our spinning programs. It has been shown that fiber fineness tends to be superior to micronaire in determining certain fiber properties, yet micronaire remains important when evaluating spinning performance and the spectrophotometrically-determined color of dyed materials. Maturity data have been shown to be slightly superior in estimating the frequency of nep formation.

The 36 cottons were tested using IIC/Shirley F/MT instruments after opening each sample with the Essdiel Fibreopener/blender. The two F/MT instruments employed were the Series I and the semi-automated Series II. After conditioning the samples, two determinations were made on each. Additionally, caustic soda swelling tests were performed on the cottons according to ASTM D-1442 procedure. Two operators made two determinations each, meaning that the results given represent the averages of four determinations per sample.

The maturity data determined by the instruments and the swelling tests, coupled with fineness data determined instrumentally, were evaluated first by performing correlation analyses between the various fiber properties. Secondly, several combinations of fineness and maturity data were incorporated with individual instrument data for regression analyses with selected yarn performance and quality parameters.

The individual instrument data came from utilizing the following instruments: (1) Stelometer for tenacity and breaking elongation; (2) Digital Fibrograph for obtaining 2.5% span length, uniformity ratio and short fiber content; and (3) Shirley Analyzer for non-lint content of each sample.

The combinations of fineness and maturity-related data that were included with the above are: (a) Caustic soda maturity; (b) Fineness and maturity from the F/MT Series I instrument; (c) Fineness from

**FINENESS, MATURITY AND MICRONAIRE DATA**

Bale	F/MT II		F/MT I		Caustic Soda Mat.	Micronaire		
	mat	fin	mat	fin		Fibronaire	MCI	Spinlab
1332	81.4	161	80.5	171	81.5	3.90	4.00	4.0
1333	53.5	118	51.5	125	68.0	2.50	2.35	2.3
1334	81.6	159	82.5	166	84.7	4.00	4.05	4.1
1335	81.0	160	80.0	171	88.0	3.95	3.95	4.0
1336	78.5	161	78.5	170	85.5	3.97	4.10	4.1
1341	63.7	133	63.0	137	69.5	2.88	2.90	2.8
1345	88.4	175	87.5	188	88.0	4.55	4.85	4.8
1348	72.7	143	72.5	153	73.0	3.18	3.40	3.5
1351	52.5	134	50.5	143	52.0	2.63	2.60	2.7
1353	51.7	143	51.0	152	68.0	2.70	2.60	3.0
1354	81.1	194	77.0	219	80.5	4.58	5.00	4.8
1355	81.4	192	79.5	214	86.0	4.58	4.90	5.1
1357	84.9	204	83.5	222	84.0	5.05	5.30	5.3
1359	84.2	187	84.0	196	83.5	4.72	4.90	4.8
1360	85.6	201	84.0	224	87.5	4.98	5.20	5.4
1316	84.4	183	81.0	202	84.0	4.68	4.75	4.8
1317	83.3	154	81.0	169	87.3	3.98	4.15	4.1
1319	71.0	137	67.0	147	71.0	3.03	3.05	3.2
1342	83.4	176	78.0	197	84.0	4.47	4.65	4.7
1344	84.3	171	83.0	184	82.7	4.30	4.50	4.6
1346	84.4	170	81.5	194	83.5	4.38	4.55	4.7
1347	86.2	183	87.0	195	86.0	4.80	4.90	5.0
1349	64.7	154	60.0	174	71.3	3.35	3.50	3.5
1350	62.2	144	58.0	158	71.0	3.05	2.95	3.1
1352	59.8	145	57.5	157	61.5	2.93	2.90	3.1
1356	81.7	152	79.0	167	82.0	3.93	4.00	4.0
1361	85.4	181	88.0	187	85.0	4.78	4.85	4.8
1363	84.7	169	84.5	185	83.0	4.55	4.65	4.5
1318	83.2	163	82.5	172	89.5	4.47	4.65	4.6
1320	76.4	125	72.0	137	72.5	3.12	3.30	3.3
1321	58.5	110	55.5	121	67.5	2.53	2.40	2.5
1322	85.0	133	83.5	143	84.0	3.67	3.75	3.7
1323	67.8	102	63.5	110	68.7	2.60	2.50	2.4
1343	82.6	176	81.0	197	83.3	4.38	4.75	4.9
1358	81.0	170	79.5	188	79.5	4.32	4.30	4.3
1362	87.7	174	87.0	188	93.0	4.57	4.90	5.1

the F/MT and caustic soda maturity; and (d) Micronaire value.

The table on the previous page gives some rather interesting information. Each of the 36 bales supplying samples for the study are listed on the left side of the table. Following this are maturity and fineness values obtained from the IIC/Shirley F/MT instruments. In the center column we show maturity obtained by the caustic soda test. On the extreme right are micronaire values from the Fibronaire, the Motion Control HVI system, and the Spinlab HVI equipment.

The table gives a comparison between micronaire, maturity and fineness. An example would be the sixth bale listed, number 1341, which had a low micronaire on any of the three methods used, low maturity rating from the two F/MT instruments, and also was a very fine fiber when measured by the same two instruments. The caustic soda maturity rating for this fiber was only 69.5%.

Another interesting observation can be made by studying the test results of bales 1351 and 1322. The first of these was obviously a low micronaire, immature and fine fiber, however it is considered. The second, bale number 1322, had a micronaire in the premium range, approximately 3.7, and a maturity of about 84%, taking this from either of the F/MT instruments or the caustic soda test. However, the fineness value of this sample was virtually the same as that for bale 1351. The F/MT I measured bale 1351 at 143 millitex, and gave the same reading for bale 1322. The F/MT II gave the first bale a fineness of 134 millitex, and the second, 133. Based on these results, it would appear that bale 1351 was a low micronaire, fine, and immature cotton, while bale 1322 was mature but fine. The latter fiber is the type many textile companies would like to have when using cotton at rotor spinning. A study of the table, however, shows there were very few fine but mature samples.

A table of correlations between maturity and fineness values will be given in a forthcoming issue of *Topics*. Also, we will give the conclusions coming from this study, which was conducted under the supervision of John B. Price, an Assistant Director of TRC. A complete copy of the report is available to those who may be interested and request it.

**VISITORS** Visitors during October included Frank J. Garnier and William O. Stone, Jr., Fieldcrest Cannon, Inc., Eden, NC; Alvin Ellison, Zellweger Uster, Inc., Charlotte, NC; Reynolds Griffin, Medical Textiles, Inc., Greenwood, SC; Beckye Bates, Sunset Advisory Commission, Austin, TX; J. T. Smith, Progressive Farmer, Birmingham, AL; S. R. Skaggs, Los Alamos National Laboratories, Los Alamos, NM; Bill and Lisle Drake, Lisle Yarns, Austin, TX; Barnett Greenberg, North Texas State University, Denton, TX; Sayed Basher and Bobby Taylor, Rieter Corp., Spartanburg, SC; Mr. & Mrs. Bryan Miller, Brentex Mills, Brenham, TX; Doris Weaver Glenn, San Antonio, TX; Roger Bolick, Allied Fibers, Hopewell, VA; Kurt Masurat, Goulston Chemical Co., Monroe, NC; Mr. & Mrs. A. R. Hughes, Port Arthur, TX; and Simon J. Harris, ICI Chemicals & Polymers Group, Runcorn, Cheshire, England.

Groups coming to TRC included 24 participants in Cotton Council International's Cotton Orientation Tour, 10 students from North Texas State University, Denton, TX; 15 members of the Texas Surveyor's Auxiliary, and 21 Girl Scouts from Lubbock.