



COTTON FIBER MATURITY Those of our readers who have been following *Textile Topics* for several years will remember that researchers at the International Center have been concerned with the micronaire measurement which is often accepted as a level of cotton fiber maturity. For some years we have been suggesting that a measurement of maturity would be far more useful than micronaire and have published articles on this subject at various times. In the July and August 1985 issues of *Topics*, we carried brief statements about fiber maturity and mentioned that we planned to install a near infrared instrument manufactured by the Technicon Instruments Corporation. Then in April 1986 we reported on a conference dealing with fiber maturity that had been held at the International Center. That conference reviewed the use of the Technicon InfraAlyzer 400, designed to measure cotton fiber maturity and other characteristics of textile fibers.

In October 1987 we presented a report on cotton fineness and maturity. In that article we stated, "While it [is] 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." Additionally, "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."

We would encourage our readers to refer to the October 1987 article, for we feel it gave a good comparison of fineness, maturity, and micronaire as measured on different instruments. The data presented in that report show that in most upland cottons micronaire correlates quite well with maturity. However, the data also show that some cottons can have a low micronaire reading and still be mature.

Our interest in this subject has been in assisting spinners to determine which cottons are better for both ring and rotor spinning. At the same time, we have been concerned about the discount many farmers have to take for low micronaire cotton. We are hoping that at some point in the future a measurement of maturity

can be used in place of, or along with, micronaire so that a farmer can produce fine cotton that many rotor spinners want without being penalized. As it is now, a farmer producing a fine cotton that would measure below 3.5 micronaire would have to take a discount, although his cotton might be highly desirable for certain types of spinning. Considering this, we have been eagerly awaiting the new fineness/maturity tester (F/MT III) from Shirley Developments Limited of Manchester, England. Our studies with earlier models of this instrument (F/MT I and F/MT II) have shown that the measurements can be valuable in evaluating cotton. However, testing on those models was time consuming. The F/MT III has been designed to perform fineness and maturity tests at a much faster pace. This offers considerable hope for eventually including a measurement of maturity along with the other values now determined by USDA's high volume instrument classing.

We are pleased to report that Shirley Developments recently installed their F/MT III at the International Center. Mr. Russell J. Crompton,



Russell J. Crompton (l) and Robin F. Hurrell (r), both of Shirley Developments Limited, Manchester, England, discuss operation of the F/MT III with Harvin Smith, Head of ICTRD's Materials Evaluation Laboratory.

Managing Director of Shirley Developments, was here for the installation and stated that this particular unit is the first to be placed at any location. It will be used in conjunction with our extensive fiber testing of the 1988 cotton crop from Texas and other states

Shirley Developments reports that the time required to measure micronaire, fineness in millitex, percent mature fibers, and maturity ratio with the F/MT III is less than 30 seconds per bale sample. Early trials here at the International Center have revealed that a single sample can be completely tested on this instrument in 25 seconds. However, our normal procedure is to test two samples that represent the same bale of cotton, and following this procedure with the F/MT III would require nearly one minute while two samples can be tested completely on the MCI HVI 3000 in about 42 seconds. The ideal situation would be for the F/MT III to fit with the HVI systems currently being used, and we are hoping that modifications can be made to get these two sets of instruments operating on the same time schedule. This would mean that in addition to the measurements now being made by HVI, fineness and maturity would be offered by the F/MT III.

Mr. Crompton told staff members of the International Center that plans are for Shirley Developments to integrate the F/MT III with both the Motion Control and Spinlab HVI systems. If this can be done, samples from a bale of cotton could be tested on what now are two separate instruments but then would be operated as a single unit. Certainly the measurements of fiber maturity and fineness would be helpful in evaluating a cotton and predicting the quality of the yarn and fabric made from it.

Inasmuch as the F/MT III has been installed here for only a few weeks, we do not yet have any results ready for publication. However, we can state that the early testing is impressive. We feel the instrument and its potential offer considerable advancement in cotton fiber evaluation. This is particularly true if it can be fully integrated with the HVI systems that are currently in operation.

We are pleased that Shirley Developments has placed their first F/MT III with us. We consider this quite a compliment, and we are grateful for this opportunity.



ICTRD's Harvin R. Smith demonstrates Shirley Developments' F/MT III for (l to r) Luis Pasich, Juan Vrdoljak, Aldo Ricciardi and Luis Gardenal, Instituto Nacional de Agropecuaria, Saenz Pena, Chaco, Argentina.

BARKY COTTON RESEARCH REVIEWED Bark is a thin strip of the surface of a cotton plant that often accompanies the fiber produced in certain areas of the United States. We have observed that bark is present more often when stripper harvesting is performed. Weather also seems to be an influence, for there have been times when heavy rains during harvesting have coincided with as much as 60% of the Texas high plains crop containing bark. It is sometimes difficult to determine whether trash particles are actually bark or come from other parts of the plant. In our research we often find fragments which are similar in nature to bark but are lighter in color. These are probably shreds of leaf stems.

Inasmuch as the presence of bark results in a reduced income for the farmer, the International Center has been concerned with this for many years. Bark was the motivation for research here as early as 1982 when an intensive two-year program was undertaken. The results of that effort were quite interesting. A summary of the findings was given in the September and October 1983 issues of *Textile Topics*. It was learned that light bark, even though it brought a discount to the cotton which contained it, had very little influence on spinning performance and yarn quality when producing coarser yarns on either ring or open-end machines. This caused us "to question the reason for discounting [light bark] cottons."

Interest in this problem was renewed last year when a cooperative effort was initiated and named The Barky Cotton Research Task Force. This group was organized to include representatives from Cotton Incorporated, the United States Department of Agriculture - Agricultural Research Service, Plains Cotton Growers (PCG), Plains Cotton Cooperative Associations (PCCA), and the International Center. PCCA and

the Lubbock-based Farmers Co-op Compress selected 54 bales of cotton at different micronaire levels containing no bark, light bark, and heavy bark. The major portion of the testing and processing required in this program has been performed at the International Center for Textile Research, and this is supported by the possibility of confirming our findings with duplicate trials at the USDA Clemson laboratory.

A review of this study was held at the Center on August 17. Those attending were Dr. William Lalor, Cotton Incorporated, Raleigh, NC; Ken Bragg, USDA-ARS, Clemson, SC; Earl Younts, Cotton Board, Buda, TX; Steve Verett, PCG, Crosbyton, TX; Larry Nelson, PCG, Tulia, TX; S. M. True, Cotton Board and Texas Farm Bureau, Plainview, TX; Emerson Tucker and Dale Shaw, PCCA, Lubbock, TX; Curt Wheeler, Cotton Incorporated, Lubbock, TX; Tommy Fondren, Lorenzo, TX; Don Bell Wolfforth, TX; and John B. Price, James E. Reynolds and Harvin R. Smith, ICTRD.

At this meeting, consideration was given to additional studies to further evaluate bark-related problems at ring and rotor spinning. We appreciate the cooperation of each of the organizations participating and were pleased to have the above mentioned representatives present. We feel the program is moving along quite nicely, and we anticipate the results to be of considerable interest. We hope to carry at least some of the findings in future issues of *Topics*.

DONATIONS We wish to thank Davison Publishing Co., Inc. of Ridgewood, New Jersey for their recent donation of a case of Davison's Textile Blue Book. These have been distributed among students studying at the International Center. Such donations are a great help, and we are grateful for the generosity of Davison Publishing.

VISITORS We were pleased to have a large number of visitors with us during August. Among those coming were Harry B. Collins and Murray Robinson, Delta & Pine Land Co., Scott, MS; Lawrence Burdett, Delta & Pine Land Co., Casa Grande, AZ; Carl Cox and Jean Vandelune, Natural Fibers & Food Protein Commission of Texas, Dallas, TX; Mark Hanna, University of Texas, Austin, TX; Dan Stokes, Rieter Corporation, Spartanburg, SC; Paul E. Welder, E. W. Roberts, W. R. Brownlee and Waymon Gibson, Greenwood Mills, Inc., Greenwood, SC; Alden H. Reine and Glenda Joyce Island, Prairie View A&M University, Prairie View, TX; Barbara Shaeffer, Motion Control Inc., Dallas, TX; James E. Nayfa, Stop-Shock, Inc., Dallas, TX; Frank X. Werber, USDA, Beltsville, MD; Charles Willbanks, Milliken & Co., Spartanburg, SC; Francis J. Medeiros and Andrew J. Giles, E. I. Du Pont de Nemours & Company (Inc.), Old Hickory, TN; Christopher Dioguardi, K Mart Apparel Corp., North Bergen, NJ; Harry Green, Lambeg Industrial Research Association, Belfast, Northern Ireland; Brian Currie, University of Ulster, Jordantown, Northern Ireland; Russell J. Crompton and Robin F. Hurrell, Shirley Developments Limited, Manchester, England; and Aldo A. Ricciardi, Juan Vrdoljak, Luis Gardenal and Luis Pasich, Instituto Nacional de Tecnologia Agropecuaria, Saenz Pena, Chaco, Argentina.

Others were Timothy Primus and Danny Hancock, Northrup King Co., New Deal, TX; Jan Johnson, Kip Pendleton and Steve Johnston, Northrup King Co., Minneapolis, MN; Mark T. Wall, Northrup King Co., Golden Valley, MN; Richard Pullen, Northrup King Co., Hartsville, SC; Keylon Gholston, Northrup King Co., Baldwin, MS; James C. Dillard, Tupelo, MS; Kenneth Bloodworth, Batesville, MS; Jimmy Stanford, Jackson, TN; Bob Pinner, Whiteville, TN; Leslie Moffatt, Brighton, TN; and Mark Mattingly, Bowling Green, KY.

A group of Extension Service cotton specialists from across the cotton belt also visited the Center in August. They were George L. Morris, University of Arkansas, Little Rock, AR; David S. Guthrie, North Carolina State University, Raleigh, NC; Charles Burmeister, Alabama Coop Extension Service (Auburn University), Belle Mina, AL; Don R. Howell, University of Arizona, Yuma, AZ; Lawrence L. Harvey, Clemson University, Clemson, SC; Paulus P. Shelby, University of Tennessee, Jackson, TN; David W. Albers, University of Missouri, Kennett, MO; Thomas A. Burch, Louisiana State University, Baton Rouge, LA; George P. Mullendore and William H. McCarty, Mississippi Cooperative Extension Service, Mississippi State, MS. Accompanying the group were John I. Willard, Denny O'Neal and Rhett R. Atkins, BASF Corporation, Parsippany, NJ; Patrick Shepard, Little Publications, Inc., Memphis, TN; E. W. "Buddy" Sanders, WMC AM-FM-TV, Memphis, TN; Bob Cockrum, Texas State Network, Dallas, TX; George L. Earle, Fleishman Hillard Inc., Kansas City, MO; and Joe Dan Boyd, Farm Journal, Richardson, TX.

Six textile executives from Taiwan also came for a visit and tour during the month. They were C. Y. Tsai, Fu Hsiang Textile Co., Ltd., Taipei; Vicki Tu, Wan Yuan Textiles Co., Ltd., Taipei; W. T. Yang, Fu-Ta

Textile Co., Ltd., Taipei; Tsun Li, Hua Yue Textile Group, Taipei; Cheng Ying Peng, Fu I Group, Taipei; and John M. Wu, Far Eastern Textile Ltd., Taipei. This group was accompanied by David B. Collins and Roger Yu, Cotton Council International, Washington, DC and Lawrence C. Wei, CACI Language Center, Arlington, VA.

Additionally, ten cotton growers from Australia, members of the Central Queensland Raingrown Cotton Growers Association, visited and toured the Center. And finally, a group of eight 4-H members from Mitchell County, Texas came to the Center to observe cotton textile processing.

All in all, August was a very busy month here at ICTRD. We certainly enjoyed visiting with all who came, and we hope they enjoyed the time spent at the Center.