



TEXTILE TOPICS

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NAME CHANGE FOR RESEARCH CENTER Many of our readers are already aware that our research reports, *Textile Topics*, and correspondence are sent to a great number of countries outside the United States. In fact, *Topics* is mailed to leading textile countries on every continent, except Antarctica, and our reports have virtually the same distribution.

Because of the many contacts we have on an international basis, the Texas Tech University Board of Regents has decided to rename the Center the "*International Center for Textile Research and Development*." We agree with university officials that this title is more descriptive and better fits our activities.

Several of our friends from different parts of the world, who are already aware of the name change, have encouraged us not to change the TRC logo. We think this is a wise suggestion, for the logo seems to be well known and recognized. Therefore, future editions of *Textile Topics* and our research reports will carry our new name, but the TRC logo in red will be retained. Such changes always create a few minor problems and sometimes seem awkward at first, but we are sure we will soon feel comfortable with this.

COTTON FIBER FINENESS AND MATURITY In last month's issue of *Topics* we carried part of a report on cotton fiber fineness and maturity that had been prepared for the Natural Fibers and Food Protein Commission of Texas (NFFPC) in 1986. We are presenting the concluding portion in this issue. However, the information given in these two *Topics* is only a condensed version of the original report. As we have stated, the full report will be made available to anyone requesting it.

In order to show the correlation between cotton fiber maturity, fineness, and micronaire value, we are presenting the accompanying table (see next page). In the course of this research, we also measured spinning performance and yarn quality of the 36 cottons used. It can be seen that nep frequency was correlated with fiber maturity, fineness and micronaire. This was an interesting study, for many textile manufacturers associate neps with low micronaire, which is considered a measure of immaturity.

It will be noted that the correlation of neps to fiber properties is much better for ring yarns than for rotor yarns. Because of the structure of the yarns, neps tend to appear on the surface of ring yarns but seem to be enclosed in the body of a rotor-spun yarn. Looking at ring yarn only, therefore, it will be seen that there was a better correlation of neps with micronaire and maturity than with fineness. This may be an indication that some fine cottons are not necessarily immature and that fine cottons, if mature, can be processed without resulting in a high nep count.

It will be observed in the table that micronaire was measured by three different methods. These were the Motion Control HVI system, the Fibronaire, and the Spinlab HVI series. Maturity was measured by Shirley Developments' F/MT I and F/MT II units, and by sodium hydroxide swelling. Fineness values were taken from the Shirley F/MT instruments. Two assessments of the number of neps per unit area were made for ring and rotor-spun filling yarns in fabric form. One count was made for neps judged to be purely fiber entanglements. The second measurement included those fiber aggregates which were associated with trash, such as seed coat fragments. The data collected from this research demonstrate that the micronaire-related property was always present, often together with a length-related property. The caustic soda swelling test for maturity was better than instrument-measured maturity in explaining the variation in

CORRELATIONS BETWEEN MATURITY-RELATED AND FINENESS-RELATED VALUES

	Micronaire			Maturity			Fineness	
	MCI	Fibronaire	Spinlab	F/MT I	F/MT II	NaOH	F/MT I	F/MT II
<u>Micronaire</u>								
Fibronaire	0.9935		0.9844	0.9003	0.8975	0.8595	0.9116	0.9294
Spinlab	0.9911	0.9844		0.8749	0.8805	0.8443	0.9354	0.9410
<u>Maturity</u>								
F/MT I	0.8992	0.9003	0.8749		0.9894	0.9192	0.6824	0.7169
F/MT II	0.9011	0.8975	0.8805	0.9894		0.9146	0.6945	0.7110
NaOH	0.8559	0.8595	0.8443	0.9192	0.9146		0.6671	0.6923
<u>Fineness</u>								
F/MT I	0.9187	0.9116	0.9354	0.6824	0.6945	0.6671		0.9878
F/MT II	0.9310	0.9294	0.9410	0.7169	0.7110	0.6923	0.9878	
<u>Neps</u>								
Ring	0.6920	0.7057	0.6690	0.7735	0.7703	0.8330	0.4936	0.5091
Rotor	0.3806	0.3952	0.3926	0.5433	0.4744	0.4291	0.2948	0.2658
<u>Neps & Trash</u>								
Ring	0.7620	0.7670	0.7377	0.8297	0.8314	0.8712	0.5790	0.5963
Rotor	0.5025	0.5087	0.5033	0.5800	0.6132	0.5140	0.3976	0.3641
<u>ΔE</u>								
Ring	0.8517	0.8561	0.8451	0.8016	0.7905	0.7964	0.7766	0.8036
Rotor	0.5552	0.5552	0.5647	0.4499	0.4562	0.4565	0.5246	0.5126

nep frequency of ring yarns. For rotor yarns, fineness tended to be the more important parameter dictating nep frequency.

Conclusions reached after this research program was completed are:

1. The frequency of neps in fabric woven from ring-spun yarn correlated best with maturity data, particularly when measured by the caustic soda method. Nep frequency in fabric woven from rotor-spun yarn also correlated best with maturity data, but instrument measurements were better in this case.
2. Multiple regression analysis suggested that fiber length was functional in describing nep frequencies.
3. Fiber fineness rather than micronaire value is the fiber property which most influences yarn strength, after tenacity and length. The influence of fiber fineness increases with yarn count, i.e. as finer yarns are spun, and is also dependent upon the spinning system used.
4. Fiber fineness and fiber length were more effective at explaining the non-uniformity of rotor-spun yarn than micronaire value in combination with fiber length.
5. Micronaire value, as an expression of the specific surface area of the cotton fiber, provided the best description of the color of a dyed structure.
6. Micronaire value may be more descriptive of spinning performance than fiber fineness.

This research was supervised by John B. Price, assistant director of our International Research Center. As mentioned earlier, the investigation was sponsored by the Natural Fibers and Food Protein Commission of Texas.

INTERNATIONAL CENTER TELEX AND FAX SYSTEMS Soon after we moved to our new facility last year, we installed a Telex EasyLink system. More recently, a facsimile transmission system has also been installed. Our new communication numbers are:

Telex: 988095 TTUTRC/EasyLink 62953521

FAX: 806-747-3796

We hope these systems will help make us more accessible to our friends throughout the world.

VISITORS Visitors to the International Center for Textile Research & Development during November included James Olvey, Warner Fisher, Barbara Greenley and Verlin Boeder, American Cyanamid Co., Phoenix, AZ; John Eckert, The Wool Bureau, Woodbury, NY; Peter Smith, Wool Development International, Ilkley, Yorkshire, England; David F. Scott, West Texas Utilities Co., Abilene, TX; Roger Bolick, Allied Fibers, Hopewell, VA; Tony Yankowsky, Allied Fibers, Petersburg, VA; Jennifer Goodwin, Business Journal of the Permian Basin, Midland, TX; Enrique Goyret, Alpargatas S.A.I.C., Buenos Aires, Argentina; Claude E. Layman, Jen-Cel-Lite, Seattle, WA; Griff T. Neumeyer, Southeastern Cotton Sales, Spartanburg, SC; David L. Harrison, Mount Vernon Mills, Inc., Greenville, SC; Carl Feaster, Supima Association of America, Phoenix, AZ; and Rick Carpenter, Fieldcrest Canon, Inc., Concord, NC.

Also visiting were Henry Webb, Coker's Pedigreed Seeds, Hartsville, SC; H. B. Cooper, Jr., California Planting Cotton Seed Distributors, Shafter, CA; H. H. Ramey, Jr., USDA-AMS, Memphis, TN; Russell Crompton, Shirley Developments Ltd., Didsbury, Manchester, England; W. A. Edwards, Avondale, Sylacauga, AL; Jose Berliavsky and Jose Nowalski, Textile CentroAmericana, S.A., San Jose, Costa Rica; Graciela Gomez, Ministerio de Agricultura y Ganaderia, Asuncion, Paraguay; Justin Gutknecht, Institut de Recherches du Coton et des Textiles Exotiques, Montpellier, France; Rodney Pilsbury, Crosrol Inc., Greenville, SC; Christine Pilsbury, Greer, SC; Helmut Deussen, American Schlafhorst Co., Charlotte, NC; and Jim Reynolds, Coralville, IA.

Ten students from the Texas Tech University Department of Art also toured the Center in November.