INTERNATIONAL COTTON ADVISORY COMMITTEE
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26th Meeting of the Task Force on CSITC
Friday, August 25, 2017
USDA/AMS
Memphis, TN, USA

The Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC) conducted its 26th meeting on Friday, August 25, 2017 at the office of the Agricultural Marketing Service, U.S. Department of Agriculture, Memphis, Tennessee.

Members Present:
Andrew MacDonald - (CSITC Task Force Chair) ABRAPA - National Brazilian Cotton Association (Brazil)
Mariana Carfagnini - Instituto Argentino de Tecnologia Industrial INTI (Argentina)
Axel Drieling, Faserinstitut Bremen
James Knowlton, USDA/AMS
Patrick Ilukat - Cotton Development Organization (Uganda)
Peter Wakefield - Wakefield Inspection Services

Observers:
Chris Delhom, USDA/ARS
Gretchen Deatherage, USDA/AMS

Secretariat:
Kai Hughes, ICAC
Yana Pomerants, ICAC
Terry Townsend, ICAC

Report of the 26th Meeting

1. Adoption of the Agenda

2. Presentation of RT 2016-4, 2017-1 and 2017-2. (Axel)

Axel reported that participation in Round Trials has been stable at about 110 instruments since 2012, with seasonal variation. He noted that some labs have dropped out and new labs have entered during the last five years, indicating that new labs are joining CSITC, but there have not been enough new labs to raise the total. Labs tend to drop out because of equipment failures and seasonal closing.

He noted that the median Combined Properties Evaluation fell from 0.5 during the period from 2007 to 2011, to between 0.35 to 0.38 in 2016 and 2017. This is a very significant improvement in average laboratory performance, indicating that the round trials are fulfilling their purpose. However, since the relatively easy gains in improvement have now been achieved, it is unlikely that the median Combined Properties Evaluation will continue to decline. The parameters exhibiting the greatest improvement over the last five years were Micronaire, Strength, Color Rd and Color +b (23% to 47% improvements in median standard deviations among instruments; smaller improvements were recorded for Length and Uniformity (16% to 17%).

Axel noted that that most properties have been on a constant level during recent Round Trials.

3. How far are mean values deviating from USDA Established Values, and how much are instruments deviating from each other?

Jimmy Knowlton presented CSITC Round Test (RT) average results compared to USDA established values for CSITC RT 2017-1 and 2017-2. For Micronaire, Strength and Length, no systematic deviations occurred. A small but perhaps systematic deviation might have been evident for Uniformity, but the difference is small enough to have no commercial relevance. The results confirm that RT participants, overall, are utilizing the USDA calibration materials.

Jimmy explained that the cotton bales selected by USDA for CSITC RT use go through the same rigorous value-establishment process as USDA calibration cottons. This ensures that the selected bales are uniform throughout and that they have known measurement levels.

It was agreed that USDA and FIBRE should continue to monitor the degree of agreement between USDA established values and RT results.

It was also agreed that USDA established values would be entered into the CSITC database to facilitate future comparisons.

There was discussion regarding comparisons between different instrument types. Although this could potentially be useful information, it was agreed that separating instrument performance from lab performance would not be possible, and much care should be taken in drawing any conclusions about instrument performance from such comparisons. Nevertheless, it was agreed that the Task Force will monitor level differences between test results by instrument type, as has already been done during some Round Trials. Axel agreed to contact the CSITC database designer, Generation 10, to facilitate evaluation of RT performance by instrument type so as to facilitate easier analysis in the future.

4. Results of Trash Measurements.

Axel explained that the results for measurement of Trash have been evaluated since RT 2016-3, and results have been included in the instrument reports since 2017-1. However, the trash results are not part of the Combined Properties Evaluation, which is based exclusively on Micronaire, Strength, Length UHML, Length Uniformity, Color Rd and Color +b.

The tolerances for scoring the CSITC trash measurements are based on the USDA Trash Reproducibility Tolerances. However, in order to achieve average participant trash scores on par with the other scored CSITC measurements, an additional 20% and 40% are added to the trash area and trash particle count tolerances, respectively. USDA uses 4 measurements for each sample, and all other laboratories are using only 2 measurements.

Axel reported that results for trash measurement improved less than is statistically significant over the first 4 RTs, so additional monitoring is necessary. It was agreed that it would be premature to modify the trash tolerances and that the trash evaluations should not be included in the Combined Properties Evaluation.

5. Results of SFI measurements.

Jimmy Knowlton compared CSITC RT average participant SFI values to USDA established values for CSITC RT 2017-1 and 2017-2. Results indicate considerable differences, especially on cottons with high SFI values. It was noted that calibration values for SFI are available from USDA on USDA length/strength calibration cottons. The SFI values are unofficial values, but can be obtained from USDA upon request. Based on variation in RT participant levels for SFI, it appears that participants may not be utilizing the SFI values from USDA for calibration. It was agreed that a question would be added to the CSITC RT questionnaire to ask participants if they are calibrating for SFI. It was also agreed that information regarding the availability of SFI calibration values should be put out to participants by CSITC.

Jimmy Knowlton presented a slide showing CSITC SFI results for RT 2017-2. Attention was drawn to the standard deviations of the 30 test averages. The results show that the standard

deviation was 0.57 for the cotton with the lowest SFI level, but the standard deviation was 1.73 for the cotton with the highest SFI level. The point was made that an equation based tolerance, similar to the ones used for the trash measurements, would need to be developed for SFI scoring. It was agreed that this work should proceed in order that scoring of SFI could be done as it is currently done with trash.

6. Results of Maturity measurements.

Chris Delhom noted that it is widely believed that the HVI measurement of maturity is insensitive over a range of values. He explained that maturity is not measured directly by HVI, but instead maturity is estimated based on HVI micronaire and other parameters.

Chris reported on research he had completed in which 1300+ samples were tested for maturity on both HVI and AFIS. The correlation between the maturity measurements of the 1300+ samples was only 0.45. The AFIS maturity ratio ranged from 0.82 to 1.11 with an average value of 0.98. For these same cottons, the HVI maturity measurement ranged from 0.816 to 0.891, with an average value of 0.855.

Chris concluded that HVI shows a substantially smaller range of responses than AFIS. He observed that the HVI maturity measurement seems to track with micronaire, with a correlation of 0.50. The micronaire range on these 1,300+ samples was 3.0 to 5.8, with an average of 4.5. Jimmy Knowlton showed a slide with RT 2017-2 results for maturity and micronaire. His results supported the conclusions reached by Chris, that HVI maturity measurements lack sensitivity and seem to be based on micronaire.

Further analysis was done to examine the relationship between AFIS fineness and HVI maturity, and the correlation was only 0.32. Fineness values in the 1,300+ samples ranged from 139 to 229, with an average of 178. In contrast, the correlation between fineness and micronaire was, unsurprisingly, a respectable at 0.61.

Chris reported that this research demonstrates that for a wide range of cotton quality and physical parameters the HVI is able to detect the differences in micronaire but not maturity. He recommended against adding maturity to the Combined Properties Evaluation due to the lack of sensitivity of the measurement. He noted that one major instrument manufacturer is attempting to improve the maturity measurement, and CSITC should wait for the results of that effort.

7. Proposal to change the limit on Rd to 1.0 from the current limit of 1.5 (Axel & Jimmy)

Axel explained that a proposal had been received to change the tolerance value for Color Rd from 1.5 to 1.0. At the start of the Round Trials in 2007, the Task Force had adopted USDA tolerances for all scored measurements used in the Combined Properties score except for Rd. The USDA tolerance for Rd is 1.0, but the CSITC tolerance for Rd was initially set above the USDA Reproducibility Limit because average laboratory performance was not good at the start of the Round Trials in 2007. However, laboratories have improved, and Rd evaluations are now very good. Therefore, laboratories could now get good results within the lower tolerance. However, it was agreed that the small benefit gained from normalizing the Rd score to the values of other scores was not worth the disruption in being able to compare scores of current and past RTs. It was agreed that such disruptions should be done very infrequently and that changing the Rd tolerance should not be done at this time. It was suggested that a good time to change the Rd tolerance would be when a new measurement is added into the Combined Properties scoring. In this way, only one disruption would be made for two changes.

8. Update on Stickiness Measurement, in conjunction with the ICCTM (Jean-Paul)

Axel reported that he and colleagues at FIBRE, along with Jean-Paul at CIRAD and Karsten Froese at ICA Bremen are working jointly to conduct stickiness round trials. Approximately 300 laboratories around the world were invited to participate in the Stickiness Round Trials, and 33 laboratories using 35 sample sets agreed to do so. The 33 participants include cotton production laboratories, instrument manufacturers and research laboratories from Australia (2),

Brazil (7), Ethiopia (2), France (2), Germany (3), India (2), Israel, Italy, Mali, China, Mauritius, South Korea, Spain, Sudan, Switzerland (2), Taiwan, Turkey, USA (2), and Vietnam. At least 13 SCT instruments, as well as other mechanical and chemical methods are included among the 33.

For the first Stickiness Round Trial, samples were sent on July 31, and the results will be evaluated in September. A second Round Trial is planned for the end of 2017. Samples cover a wide range of stickiness and were partly homogenized at CIRAD.

The findings will be shown during the next meeting of the ITMF International Committee on Cotton Testing Methods in Bremen in March 2018. Based on the findings, the next steps in a research project can be planned.

9. Increasing the Use of HVI Testing
    - Proposals for Expansion of Participation in Round Trials
    - Preparation of Comprehensive Guide on Interpretation of HVI Results

    Terry proposed that Hossein Ghorashi, Former CEO of Uster Technologies, Knoxville, USA, be asked to serve as an Ambassador for CSITC to encourage increased participation in Round Trials and increased use of HVI generally.

    The Task Force strongly welcomed the suggestion and asked Terry and Kai to contact Hossein to issue such an invitation and discuss plans for his activities.

    Andrew emphasized the importance of completing the Comprehensive Guide on Interpretation of HVI Results for spinners. Axel said that a team composed of Chris Delhom, Jean-Paul Gourlot, Vikki Martin, Mona Qaud, René van der Sluijs, and himself are preparing the Guide. A full draft is planned for the end of December so that the final guide will be available at the next Bremen Conference.

    Axel mentioned that some instrument manufacturers were considering whether it would be appropriate to include the fees for Round Trial participation in their service contracts with customers.

10. Reports from Technical Centers and Regions

    Patrik Ilukat and Axel spoke recently with Gervas Kaisi, head of the Regional Technical Center East in Dar es Salaam. Gervas was recently shifted to another directorate within the Tanzania Bureau of Standards, but he will assist his successor at the RTC to ensure continuity of management.

    Axel mentioned that Mamadou Togola, the Expert at RTC West in Segoú, Mali, is currently finalizing his PhD on instrument testing of cotton for improving ginning performance.

11. Any other business

    The next meeting will be at the ICAC Plenary in Tashkent on Sunday, October 22.
    The meeting following will be during the Cotton Conference week in Bremen from March 19 to 23.