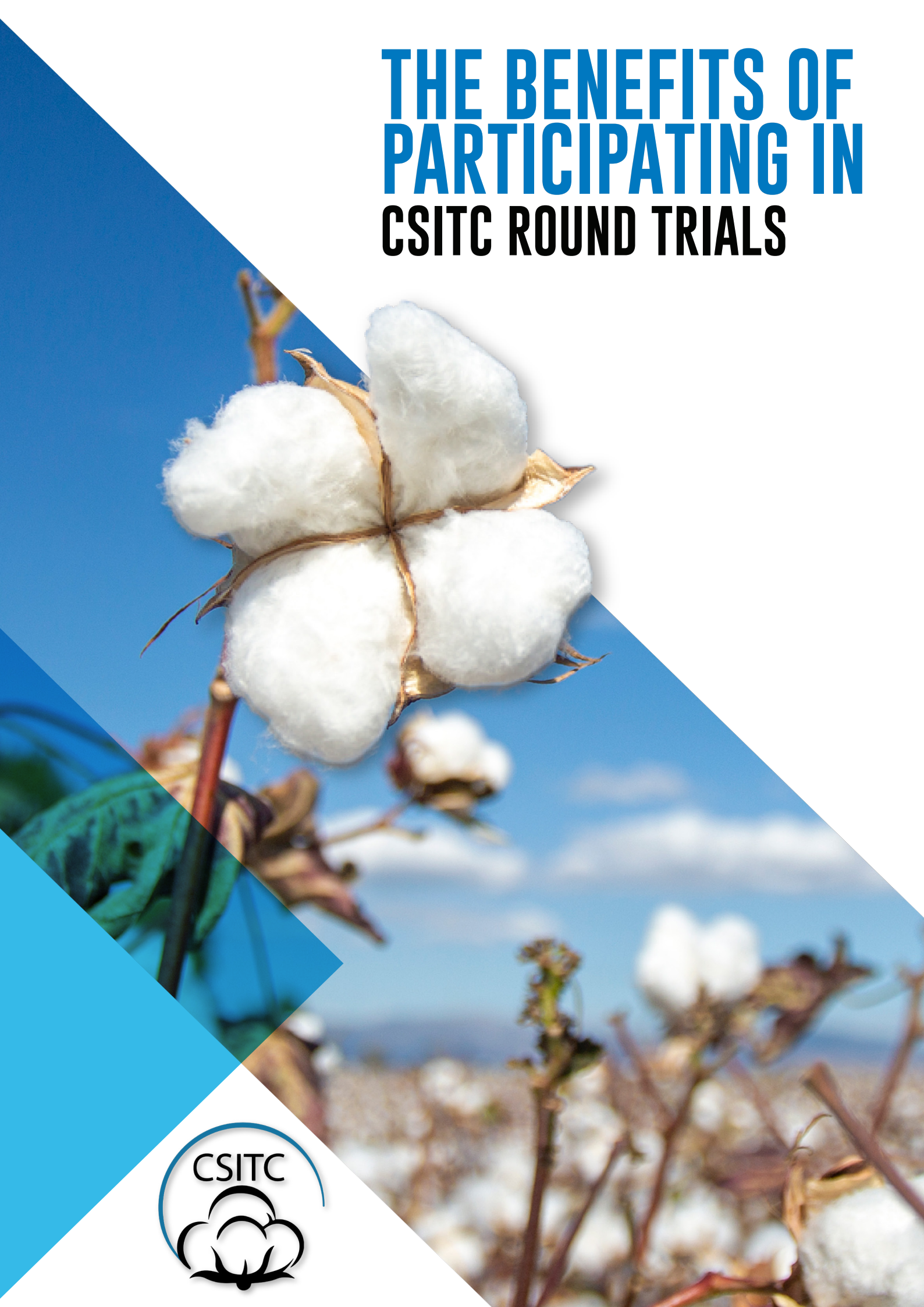
THE BENEFITS OF PARTICIPATING IN CSITC ROUND TRIALS



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How Do the Round Trials Work?

Introduction

Fiber quality is of paramount importance and there is an international consensus that the measurement of cotton fiber properties by the traditional method of subjective classing should be replaced by objective measurement by high volume testing instruments. There are, however, some technical and operating issues to overcome to ensure that classing facilities and all other testing facilities are standardized, so that they provide dependable, consistent, and repeatable results. One way to do this is by participating in Interlaboratory Round Trials and this led to the creation, by the International Cotton Advisory Committee (ICAC), of a Task Force on the Commercial Standardization of the Instrument Testing of Cotton (CSITC) in 2003. The main objectives of the Task Force are: (1) facilitate widespread use of instrument testing systems at the producer level while upholding the standards and tolerances that maintain the integrity of high-quality testing, (2) facilitate the adoption of instrument testing standards and procedures utilized by USDA-AMS for all testing facilities around the world, (3) introduce the use of instrument testing language in the trading of cotton so that traditional descriptions of grade or type are replaced with objective instrument values and (4) develop, update and maintain a Guideline for Standardized instrument testing.

CSITC has been conducting Round Trials (RT) since 2007 as a means to achieve international standardization and this article will provide a brief overview of the process, participation, evaluation, and benefits to the various sectors within the cotton industry.

There are four Round Trials each year comprised of a set of four homogeneous Upland cotton samples from the USDA standard cotton program which are distributed to participating facilities during the first week of each quarter. Each sample is tested for five days by each participating instrument in each facility and assessed for six primary fiber properties. The six fiber properties for evaluation include micronaire, strength, length, length uniformity and color in terms of Reflectance (Rd) and Yellowness (+b). Other secondary properties such as trash count and area, short fiber index and maturity are also assessed and evaluated but are currently not included in the Overall Evaluation Result.

Results for all the tests are collected and evaluated by the Bremen Fiber Institute. Instruments are given an Overall Evaluation Ranking (combining all fiber properties to indicate the level of performance in comparison to all other instruments). A ranking of their performance for each of the six fiber properties is also performed. These rankings are based on how close the mean value of each instrument is to the grand mean value of all participating instruments after excluding outliers. A score of zero would be perfect and a value of 1 would signify that the average deviation is at the tolerance limit and hence not acceptable. The benefit of participation in CSITC RT as opposed to other RT are that facilities are provided with: (1) an independent and objective comparison to more than 100 instruments worldwide, (2) an Overall Evaluation Result (OER) which indicates the standing of the instrument in ONE value, (3) a complete, specific report for each instrument with deviations (action items for improvements) allowing for targeted improvement, (4) results based on the evaluation of all single data, not only accuracy, but also precision (although not taken into account for the ranking) (5) a certificate of participation demonstrating commitment in quality management and (6) a certificate displaying performance in comparison to the median of all the participating instruments.

Participation

Facilities can register at any time, and they will begin the process at the beginning of the next quarter. Participation is presumed for four quarters per year unless the facility is not operational for all the quarters. Payment is per sample set, and up to four individual instruments can be evaluated per sample set. Participation cost is $ 325 USD per RT , or $1300 USD for a complete year.

As can be seen in Figure 1 there was a steady increase from 2007 to 2014 in the number of facilities and instruments that participated in the RT's. This was followed by a period of relative consistency until 2018, followed by a decline thereafter mainly attributed to COVID 19 and the economic downturn with a slight increase from 2021 onwards.

What is of interest is that although the number of facilities participating have remained fairly consistent from 2021, the number of instruments have increased, highlighting the fact that participating facilities are including more instruments in the RT. There are also seasonal variations in participation with trends showing that participation typically dips at the beginning of each year but increases with the third and fourth rounds, especially in countries such as Australia and Brazil. During 2023 a total of eighty-one facilities from thirty-two countries participated in the four RT.

On average at 73 % the majority of participants are production and classing related, 19% research, government and instrument manufacturers and only 9% spinning mills. The participation rate by spinners is considered low and CSITC are actively looking at how to engage the mills and encourage them to participate.

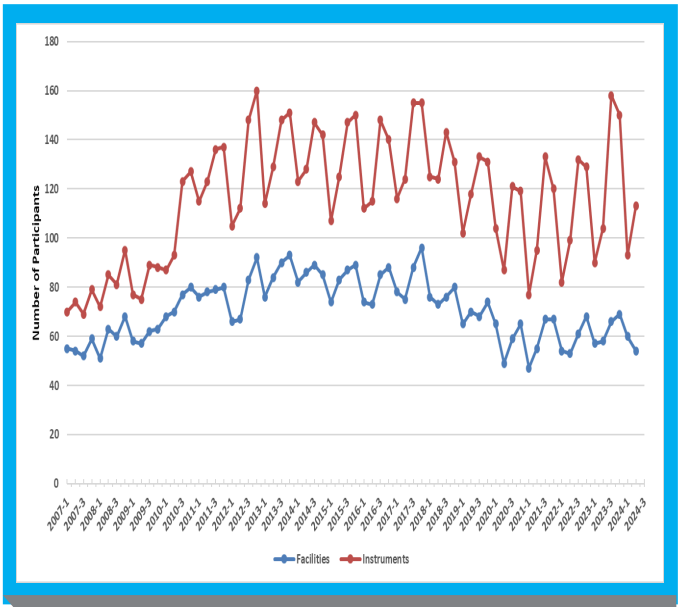

FIGURE 1. NUMBER OF FACILITIES AND INSTRUMENTS PARTICIPATING FROM 2007 TO 2024

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Results

As can be seen in Figure 2 the results for the earlier years 2007 to 2011 were below expectation as laboratories participating in the RT required time to improve their procedures and practices. The results significantly improved from 2012 onwards, when the number of participants remained consistent, the results steadily improved from 0.50, with the overall median of participating laboratories reducing to 0.35. This trend suggests progress in the accuracy and reliability of the testing processes among the participating facilities and instruments.

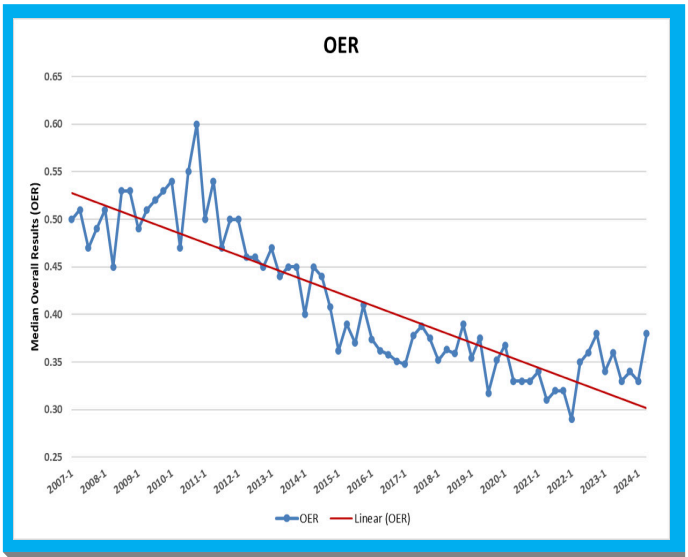


FIGURE 2. MEDIAN OVERALL EVALUATION RESULT FOR ALL INSTRUMENTS FROM 2007 TO 2024

Benefits

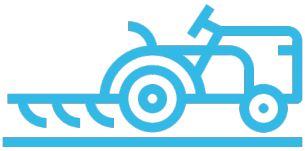
The likely benefits for participation by the various industry sectors include the following:

1. Classing and Testing Facilities

a) Provide accurate, dependable & consistent results
b) To maximize return to the grower and value to the spinner
c) Enhance reputation within the cotton industry
d) Become a provider of choice
e) Interlaboratory trials are a requirement for ISO 17025 & 9002 certification
f) Participation is a requirement for ICA/Bremen certification
g) Facility can be used for technical arbitration
h) Accurate Government/industry reporting
i) Allow breeders to make confident decisions on variety selection

2. Grower/Producer

a) Accurate data assists in maximizing return
b) Allows for accurate assessment of growing practices
c) Adds value - the better classified fiber quality is the higher the price per lb./bale
d) Assists in the explanation of premiums and discounts
e) Provides feedback to ginners



3. Trading

a) To maximize return
b) Assists in determining premiums and discounts for the grower
c) Test results assist in settling disputes with growers & spinners
d) Fiber parameters to build uniform lots
e) To provide spinners with consignments of required fiber properties

4. Spinners

a) To avoid receiving cotton not desirable for producing required end-use
b) To ensure that cotton delivered is as per required specification.
c) Ascertain and manage variability
d) To aid in the control of blending and mixing, nep count, ends down in spinning, comber noil, waste, yarn and fabric quality and processing performance
e) Adjust technical specifications (i.e., spinning system, TPI, noil %, rpm etc.)
f) To determine control limits
g) To make quality claims with accurate information

Conclusion

In order for the cotton industry to move to the objective measurement by high volume testing instruments some technical and operating issues will need to be overcome to ensure that classing facilities and all other testing facilities provide dependable, consistent, and repeatable results. One way to do this is by participating in CSITC RT that has many benefits above other RT including independent and objective comparison to more than one hundred instruments worldwide, a complete, specific report for each instrument with deviations-where not only the accuracy, but also the precision is analyzed-and the calculation of OER which indicates the standing of the instrument. Potential benefits for the various sectors of the cotton industry in participating in CSITC RTs have been outlined.

CSITC

Need more information ?

For questions regarding registration/participation please contact csitcsecretariat@icac.org or Ms. Maria Borisova - maria@icac.org

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