CSITC Task Force Contributions

Axel Drieling, Faserinstitut Bremen e.V. / ICA Bremen, Germany

33rd Meeting of the CSITC Task Force
Mumbai, India, December 2nd, 2023

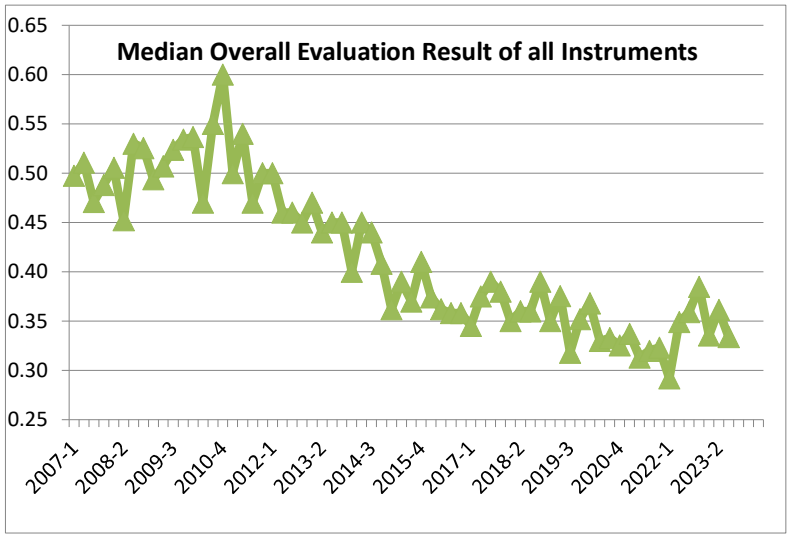
Round Trials - Introduction

- CSITC Round Trials are one of the activities of CSITC Task Force
  - Executed by
    - ICAC: registration (Maria Borisova)
    - Faserinstitut Bremen: execution (Axel Drieling)
    - USDA-AMS: samples (Gretchen Deatherage)
  - Conducted 4 times a year → CSITC RT 2023-3 ended in September, 2023-4 approx. Dec 20th
  - 4 samples, each tested 30 times (5 days x 6 tests)
  - Analysis of all properties
    - 6 properties for evaluation: Mic, Str, UHML, LU, Rd, +b
    - 4 properties for information: Trash Area, Trash Count, SFI, Maturity

Round Trials - Introduction

- **Analysis**
  - Analysis of the deviation between lab average result and reference value (average of all labs)
  - For each property:
    - Average of the absolute deviations of all 4 samples
    - Divided by a scale value for achieving comparable unitless evaluation result
      - Scale value fixed based on USDA AMS reproducibility limits
        - → Caring for the same level for all properties
      - Typical results between 0.2 and 0.7
    - **OER** Overall Evaluation Result as the average evaluation of the 6 properties
      - Combining all properties to one value
    - **So OER is a value showing in one value how far an instrument is deviating from the true results**

Development of the Median OER

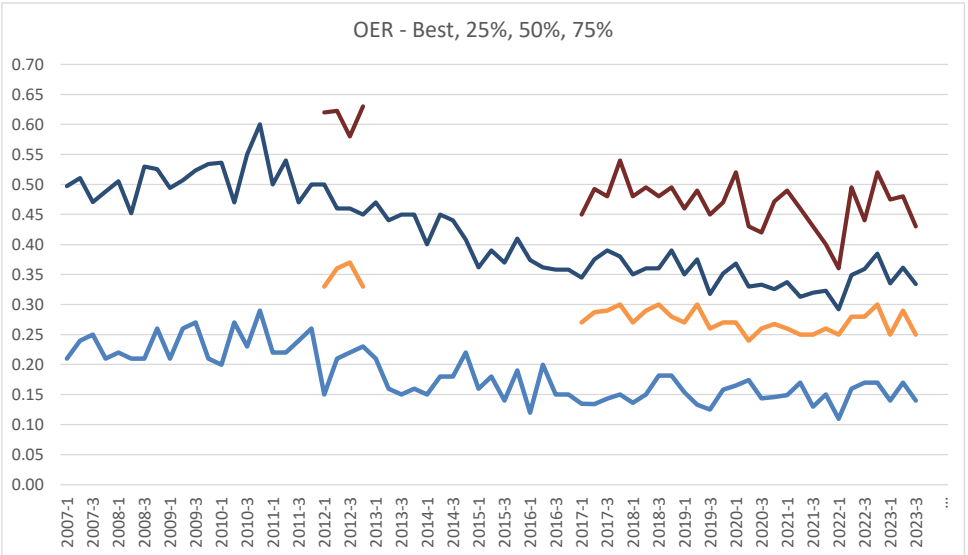


- Results were improving drastically since 2011
- New status since 2015
- Further improvements from 2020 could not be continued
- So a constant level of 0.35
- Compared to 2007-2010 OER is reduced = improved by 35%
- Improvement on all properties
- This means a 35% reduction of interlab. variation for all CSITC checked laboratories
- Reasons:
  - (New) labs are learning and then keeping the good level
  - New instruments

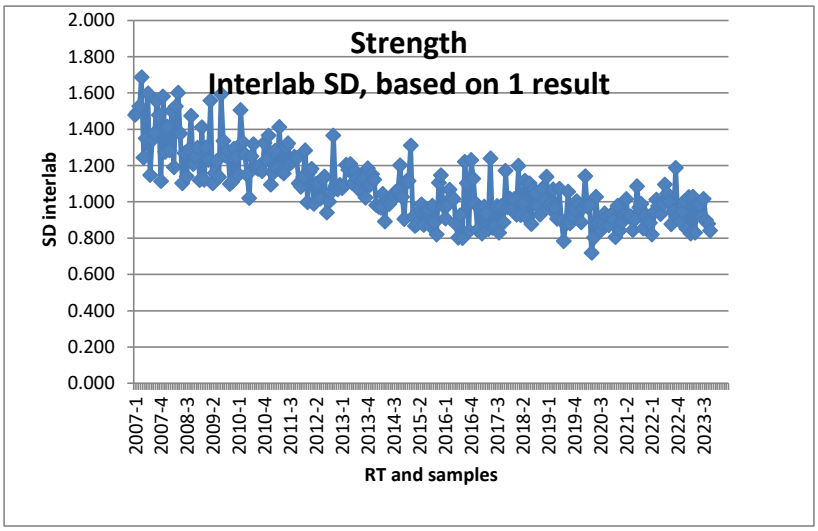
Evaluation Results in Detail

	Number of Participants				OER Distribution					Single Properties - Median Evaluations						Median Eval. Trash	
	Instru-ments	Labs	Sample Se	Uster Prg	World: Median OE	World: best OER	World: 25% OER	World: 50% OER	World 75% OER	Evaluation Micronair	Evaluation Strength	Evaluation Length	Evaluation Uniformit	Evaluation Color Rd	Evaluation Color +b	Trash Cou	Trash Are
Scale Value										0.10	1.50	0.02	1.00	1.50	0.50	1.4 x USDA	1.2 x USDA
Relevance										1	1	1	1	1	1	0	0
min	69	47	60		0.292					0.30	0.25	0.25	0.23	0.20	0.25	0.19	0.25
max	160	96	117		0.600					0.64	0.64	0.52	0.49	0.71	0.74	0.42	0.43
AV 2007-11	95	66			0.51					0.51	0.47	0.41	0.37	0.50	0.49		
AV 2012-15	134	83	95.7		0.43					0.44	0.37	0.37	0.35	0.37	0.42		
AV 2015-19	130	77	97		0.36					0.38	0.33	0.34	0.32	0.25	0.37	0.31	0.35
AV 2020-2022	108	59	76	0.0	0.34	0.15	0.26	0.34	0.45	0.35	0.31	0.32	0.30	0.22	0.35	0.25	0.34
AV 2023	117	60	77	0	0.34	0.15	0.26	0.34	0.46	0.34	0.30	0.33	0.28	0.21	0.40	0.20	0.27
AV all	116	71	90	0	0.42	0.18	0.28	0.42	0.49	0.43	0.38	0.36	0.34	0.35	0.42	0.28	0.34
Improved Evaluation Grade 2023 / 2007 to 2011					-33%					-34%	-37%	-21%	-24%	-59%	-17%	-42%	-27%
2023-1	90	57	70	0	0.335	0.140	0.25	0.34	0.48	0.32	0.31	0.34	0.28	0.20	0.34	0.19	0.30
2023-2	104	58	69	0	0.361	0.170	0.29	0.36	0.48	0.39	0.28	0.30	0.31	0.22	0.47	0.19	0.25
2023-3	158	66	93	0	0.334	0.140	0.25	0.33	0.43	0.30	0.30	0.34	0.26	0.20	0.40	0.22	0.25
2023-4																	
...																	

Quantiles (25%, 50%, 75%)



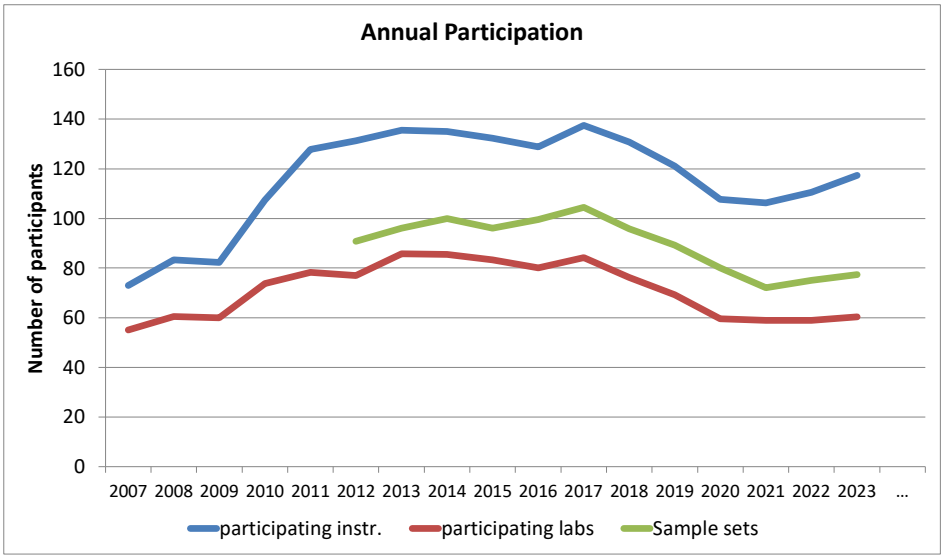
Interlaboratory SD



Example Strength:

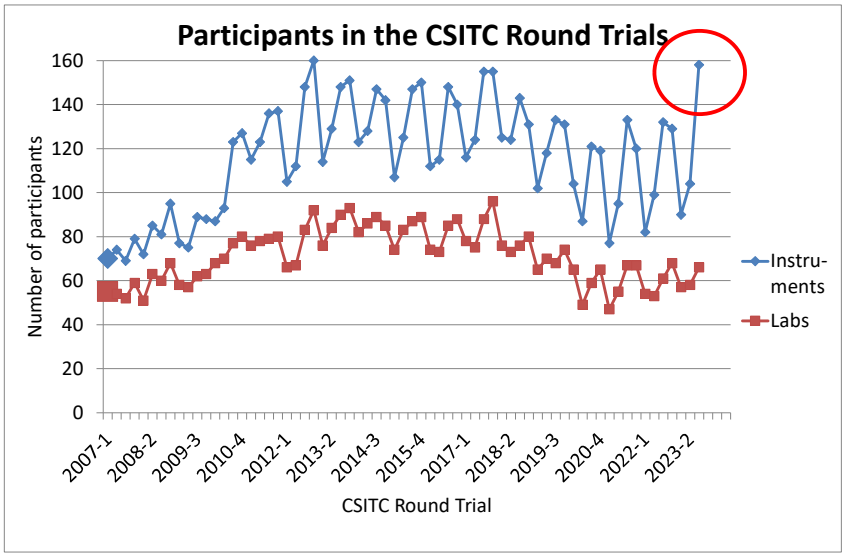
- This is the variation between labs that you have to consider
- Reduced from 1.4 g/tex to 0.9 g/tex
- For the benefit of trading with cotton, e.g. reducing claims
- This means that the Round Trials and improvements are not solely „nice“, but extremely valuable for the cotton value added chain.

Participation – Number of Participants



- Sample sets = registration = payment
- Participating labs = laboratories sending results
- Participating instruments = actually participating instruments

Participation – Number of Participants



Participation – Regional Distribution

- Registered laboratories in 2022
- Laboratories from all continents
- Nearly all important cotton producing countries involved

Country	Labs
ARGENTINA	1
AUSTRALIA	4
BRAZIL	14
BURKINA FASO	1
CÔTE D'IVOIRE	3
CHINA	5
COLOMBIA	2
EGYPT	1
ETHIOPIA	2
GERMANY	1
GREECE	3
INDIA	13
ISRAEL	1
ITALY	1
KENYA	1
MALI	1
MEXICO	1
PAKISTAN	1
SENEGAL	1
SOUTH AFRICA	2
SPAIN	2
SUDAN	2
SWITZERLAND	1
TAJIKISTAN	3
TANZANIA	3
THAILAND	1
TURKEY	2
UGANDA	1
UNITED STATES	17
UZBEKISTAN	2
VIET NAM	1
ZIMBABWE	1

Continent	Countries	Labs
Africa	12	19
Asia	9	29
Australia	1	4
Europe	5	8
North America	2	18
South America	3	17

Registered laboratories in 2022

- Registered laboratories in 2022
- Participation is cleary focused on cotton production/classing
  - The benefits from Round Trials are obvious for cotton production/classing
  - Independently from from the kind of classing system
- **Spinning is less than 10% of the participating labs**

	Number	Percent
Cotton Production with Classing	13	14
Cotton Classing - Government	17	18
Cotton Classing - Association	20	21
Cotton Classing - Independent	19	20
Spinning Mill	9	9
Instrument Manufacturer	4	4
Govt / Research / RTC / Other	13	14

	Number	Percent
Production related	69	73
Spinning	9	9
Other	17	18