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CSITC Task Force Contributions

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ICA Bremen

25th Meeting of the CSITC Task Force
Islamabad, Pakistan, October 30, 2016

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2. Report on CSITC RT Results

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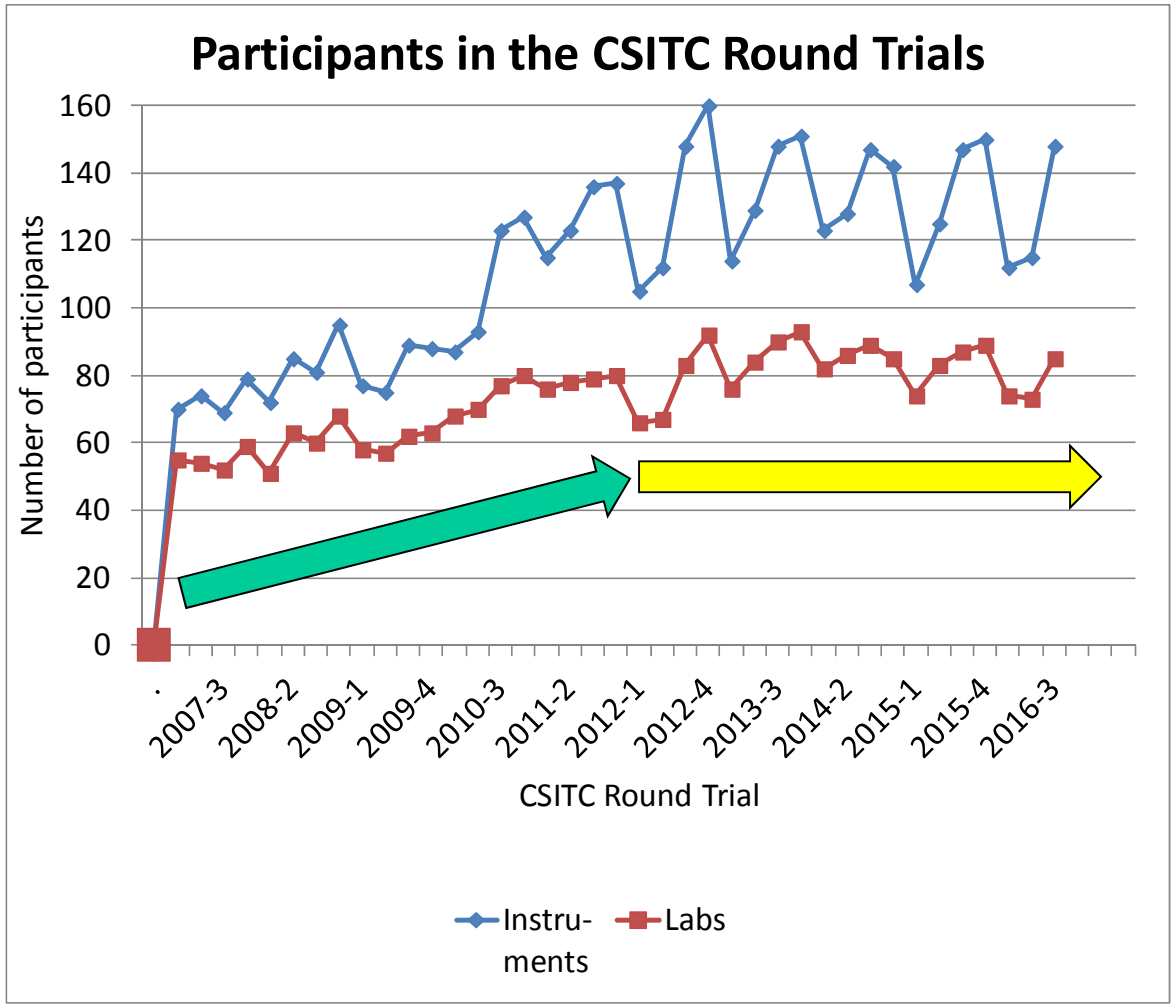
CSITC RT Participation up to RT 2016-3



Actual participants

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CSITC RT Participation up to RT 2016-3

Continent	Country	Labs	Continent Ranking	Country Ranking
Africa		18	2	
	BURKINA FASO	1		
	COTE D'IVOIRE	1		
	EGYPT	1		
	ETHIOPIA	2		
	KENYA	1		
	MALI	1		
	MOZAMBIQUE	1		
	SOUTH AFRICA	2		
	Sudan	2		
	TANZANIA	3		
	TOGO	1		
	UGANDA	1		
	ZIMBABWE	1		
Asia		44	1	
	BANGLADESH	1		
	CHINA	9		4
	INDIA	22		1
	Iran	1		
	ISRAEL	1		
	JAPAN	1		
	PAKISTAN	1		
	TAJIKISTAN	3		
	THAILAND	1		
	TURKEY	1		
	UZBEKISTAN	3		
Australia		3	6	
	AUSTRALIA	3		
Europe		13	5	
	FRANCE	1		
	GERMANY	2		
	GREECE	2		
	ITALY	3		
	LATVIA	1		
	SPAIN	2		
	SWITZERLAND	2		
North America		17	4	
	UNITED STATES	17		2
South America		18	2	
	ARGENTINA	1		
	BRAZIL	15		3
	COLOMBIA	2		

Registered labs (status Oct 2016)

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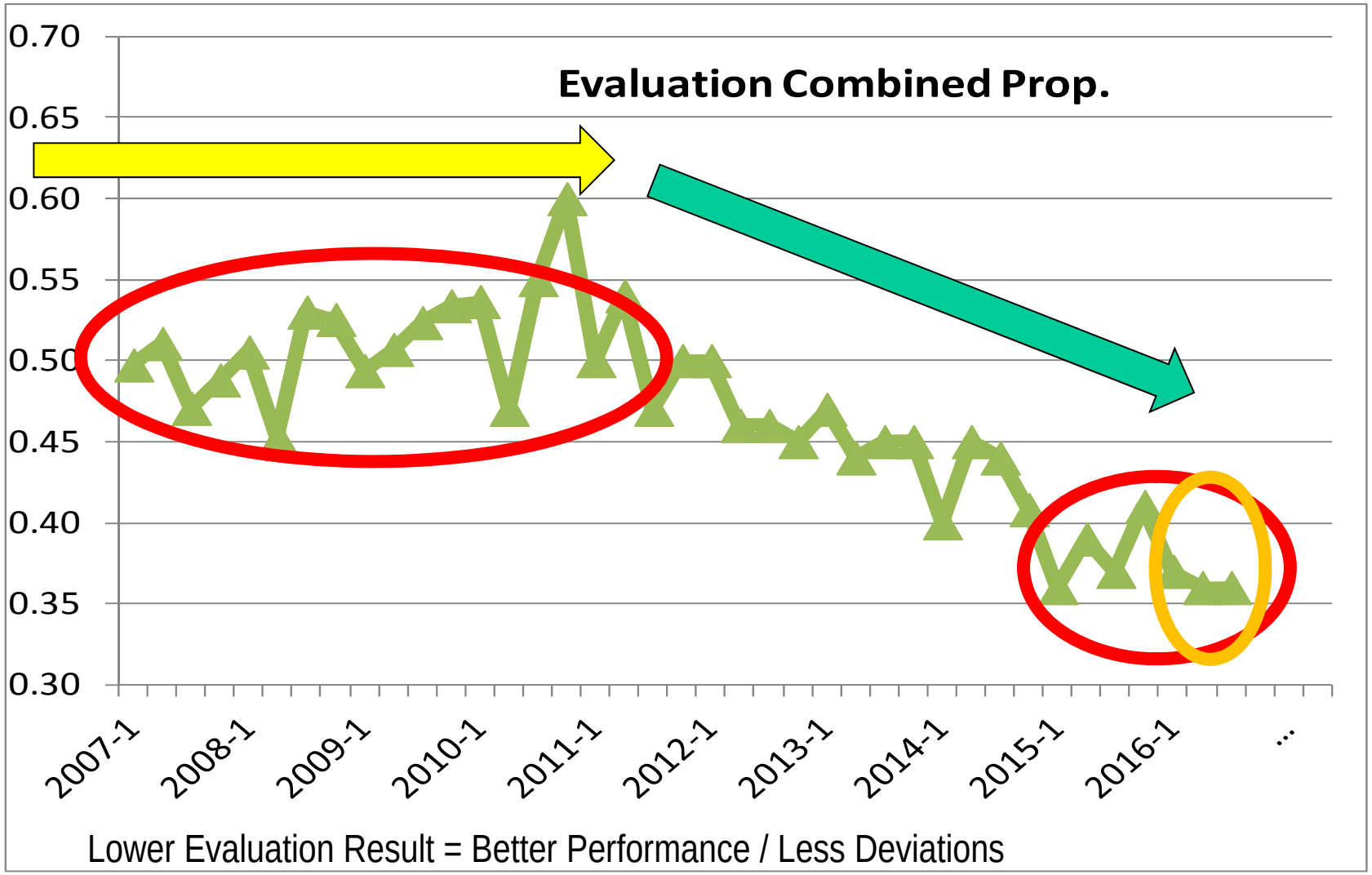
CSITC RT: Evaluation of Combined Properties (to 2016-3)



Lower Evaluation Result = Better Performance / Less Deviations

Median of all instruments: 50% of the instruments show better results than this value

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Evaluations for Each Property

	Number of Participants		Median Evaluations						
	Instru-ments	Labs	World: Median Evaluation Combined Prop.	Evaluation Micronair	Evaluation Strength	Evaluation Length	Evaluation Uniformit	Evaluation Color Rd	Evaluation Color +b
Scale Value				0.10	1.50	0.02	1.00	1.50	0.50
min	69	51	0.36	0.34	0.30	0.25	0.29	0.23	0.27
max	160	93	0.60	0.64	0.64	0.52	0.49	0.71	0.74
AV 2007-16	112.8	73.5	0.47	0.47	0.42	0.39	0.36	0.43	0.45
AV 2007-11	94.8	65.5	0.51	0.51	0.47	0.41	0.37	0.50	0.49
AV 2012-15	133.5	82.9	0.43	0.44	0.37	0.37	0.35	0.37	0.42
AV 2015	132.3	83.3	0.38	0.38	0.33	0.38	0.33	0.28	0.37
AV 2016	125.0	77.3	0.36	0.37	0.33	0.32	0.33	0.25	0.36
Improved Evaluation Grade 2016 / (2007-2011)			-29%	-27%	-29%	-23%	-11%	-50%	-27%
2015-1	107	74	0.362	0.37	0.32	0.38	0.33	0.34	0.30
2015-2	125	83	0.39	0.38	0.33	0.41	0.38	0.23	0.43
2015-3	147	87	0.37	0.37	0.30	0.36	0.32	0.31	0.34
2015-4	150	89	0.41	0.41	0.36	0.35	0.30	0.25	0.42
2016-1	112	74	0.374	0.39	0.35	0.33	0.31	0.25	0.29
2016-2	115	73	0.362	0.38	0.30	0.37	0.38	0.25	0.40
2016-3	148	85	0.358	0.34	0.35	0.25	0.31	0.26	0.38

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Summary

- The evaluation is constantly improving since 2012
- Lower evaluation values is equivalent to lower result variation between laboratories, so more consistent test results worldwide
- Before 2012, an improvement could not be seen – probably due to the strong increase of new laboratories participating
- Already 2015, the evaluation was below 0.40.
- In 2016, we currently got consistently extremely low results, despite still new labs registering
  - 0.37, 0.36, 0.36

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3. Trash Measurements in Instrument Evaluation

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Instrument Evaluation – Evaluated Parameters

Performance of Instrument: GL163-001-01							
		Micronaire	Strength	Length	Uniformity	Color Rd	Color +b
Reference Values	Cotton 1	5.081	25.807	1.0259	79.843	73.986	8.250
	Cotton 2	4.347	34.214	1.1909	83.585	76.222	13.686
	Cotton 3	4.622	30.928	1.1673	82.926	79.034	9.873
	Cotton 4	4.143	23.327	0.9887	78.397	75.960	11.821
Instrument Average of All Days	Cotton 1	5.073	25.930	1.0417	80.717	74.257	8.170
	Cotton 2	4.339	34.080	1.1900	83.583	76.567	13.583
	Cotton 3	4.629	31.687	1.1879	83.540	79.227	9.843
	Cotton 4	4.125	22.687	0.9992	78.990	76.350	11.820
Distance to Reference	Cotton 1	-0.008	0.123	0.0158	0.874	0.271	-0.080
	Cotton 2	-0.008	-0.134	-0.0009	-0.001	0.344	-0.103
	Cotton 3	0.008	0.759	0.0206	0.614	0.193	-0.030
	Cotton 4	-0.018	-0.641	0.0105	0.593	0.390	-0.001
Mean Absolute Distance to Reference		0.010	0.414	0.0119	0.521	0.300	0.053
(Cotton 1 - 4 Only)							
Scale Factor		0.10	1.50	0.02	1.00	1.50	0.50
Summary Evaluation for Each Property		**0.10**	**0.28**	**0.60**	**0.52**	**0.20**	**0.11**
Relevance of Property		1.00	1.00	1.00	1.00	1.00	1.00
Summary Evaluation of All Properties	**0.30**						

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Calculation

- Evaluation for each instrument and each property:
  - Difference between instrument result and reference result
  - Average absolute difference for all 4 samples
  - Divided by a scale value (representing an allowed tolerance)

  →Evaluation for each property

- Evaluation for each instrument as summary of all 6 properties
  - Average of the evaluations for each property

  →Summary Evaluation of all Properties

- Just including Mic, Str, Length, L-Uniformity, Color Rd and +b

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Lab Evaluation Based on Trash USDA

Scale Values for given properties (based on USDA Repr. Limits 2001)

– Micronaire	0.1 units	(fixed value)
– Strength	1.5 g/tex	(fixed value)
– UHM Length	0.02 inch = 0.5 mm	(fixed value)
– Uniformity Index	1 %	(fixed value)
– Color Rd	1.5 units	(fixed value)
– Color +b	0.5 units	(fixed value)

Trash Reproducibility tolerances used at USDA

- Particle Count Tolerance = Particle Count * 0.22 + 3.2 (formula)
- Percent Area Tolerance = Percent Area * 0.235 + 0.031 (formula)

Agreed by CSITC Task Force in Bremen 2016

for adapting evaluation result level to other parameters

- Particle Count Tolerance = 1.4 x USDA = 1.4 x [AV(P. Count) x 0.22 + 3.2] (formula)
- Percent Area Tolerance = 1.2 x USDA = 1.2 x [AV(P. Area) x 0.235 + 0.031] (formula)

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New Evaluation Table for Optional Parameters in RT 2016-3

Performance of Instrument: GL163-001-01					
		Maturity	SFI	Trash Count	Trash Area
Round Trial Average	Cotton 1	88.22	12.04	17.26	0.201
	Cotton 2	85.55	7.45	16.27	0.147
	Cotton 3	86.85	8.29	11.16	0.120
	Cotton 4	84.95	14.37	26.26	0.272
Instrument Average of All Days	Cotton 1	86.07	12.66	22.27	0.241
	Cotton 2	83.07	7.93	19.60	0.179
	Cotton 3	85.00	8.63	11.70	0.108
	Cotton 4	83.00	16.29	30.37	0.307
Distance to Round Trial Average	Cotton 1	-2.15	0.62	5.00	0.040
	Cotton 2	-2.48	0.48	3.33	0.033
	Cotton 3	-1.85	0.34	0.54	-0.012
	Cotton 4	-1.95	1.92	4.11	0.035
Scale Values	Cotton 1			9.80	0.094
	Cotton 2			9.49	0.079
	Cotton 3			7.92	0.071
	Cotton 4			12.57	0.114
Evaluation by property and sample	Cotton 1			0.51	0.43
	Cotton 2			0.35	0.42
	Cotton 3			0.07	0.17
	Cotton 4			0.33	0.31
Summary Evaluation for Each Property				0.31	0.33
Summary Evaluation for all Properties	These parameters are not included				

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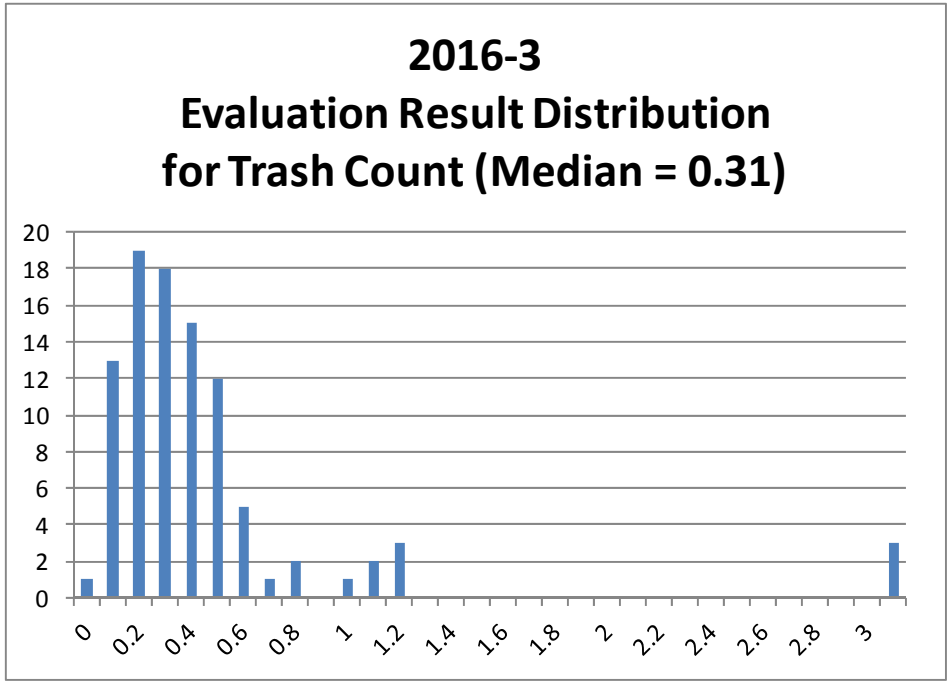
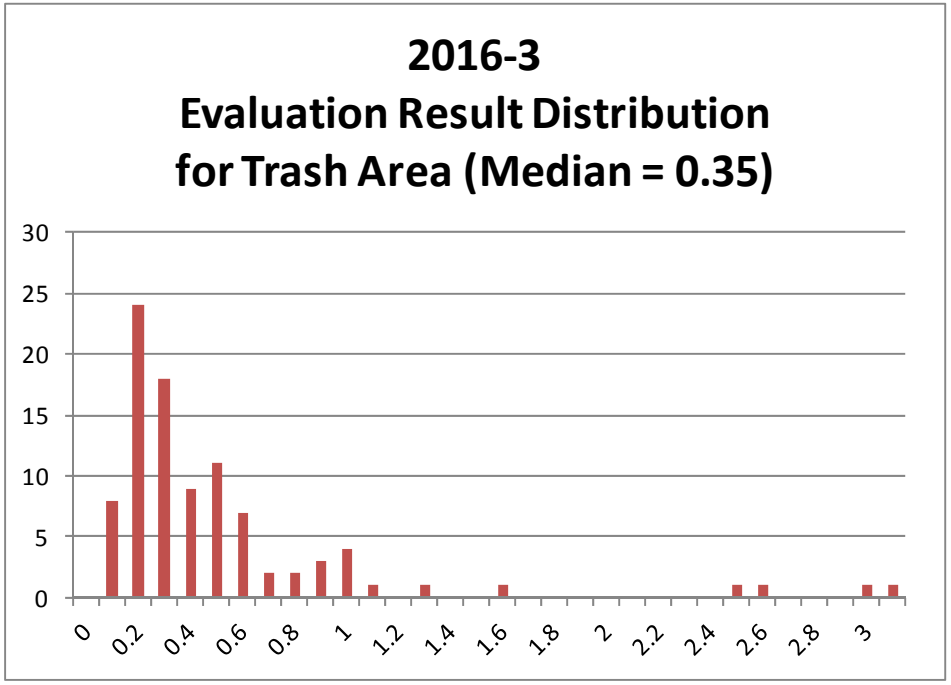
Trash Evaluation Results in RT2016-3

- In total 148 instruments participating
- For trash 95 instruments participating





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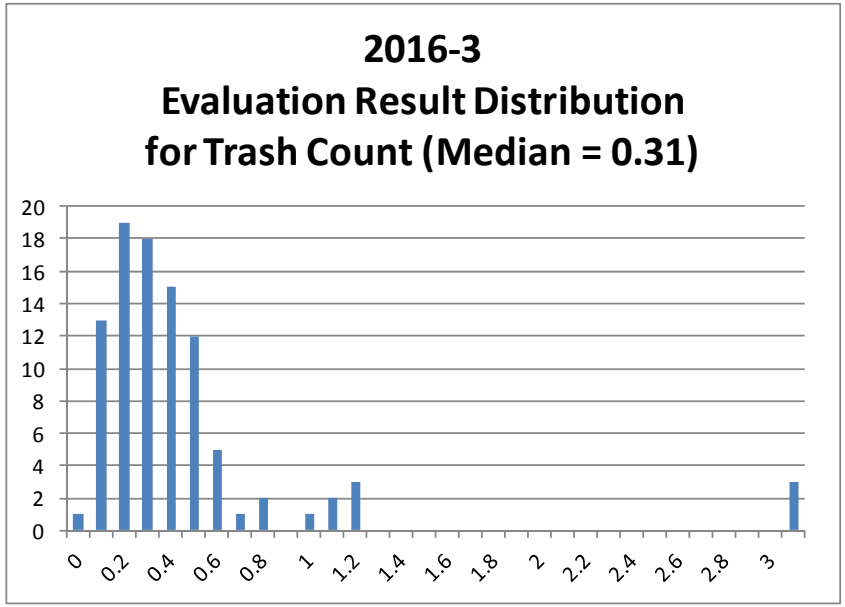
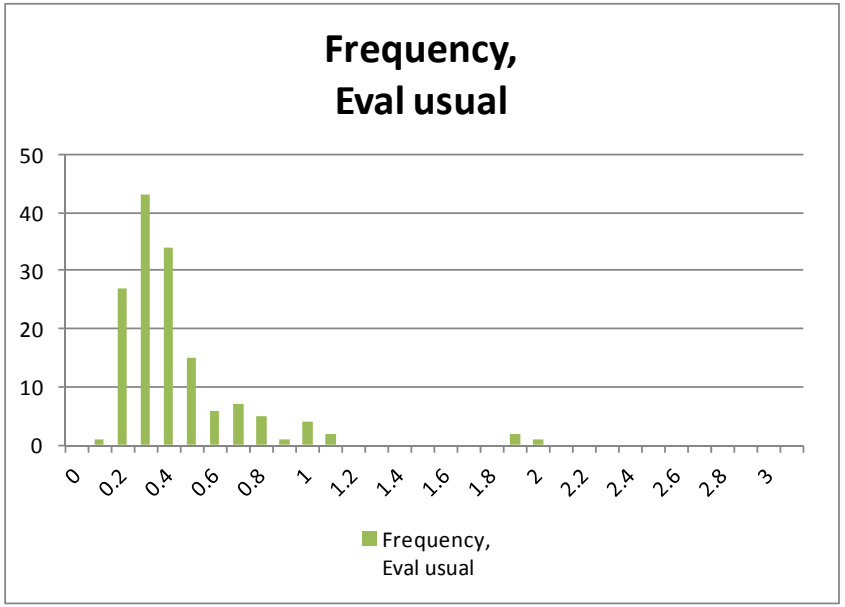
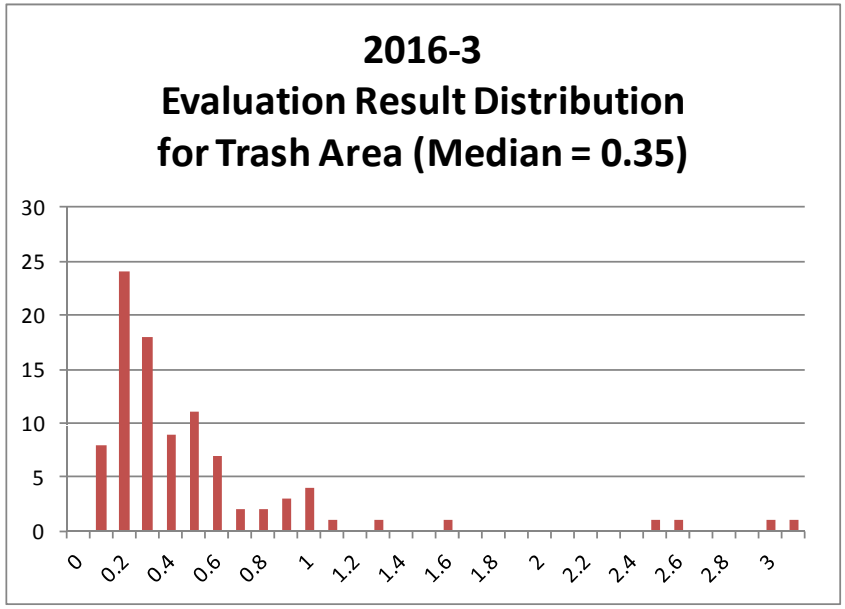
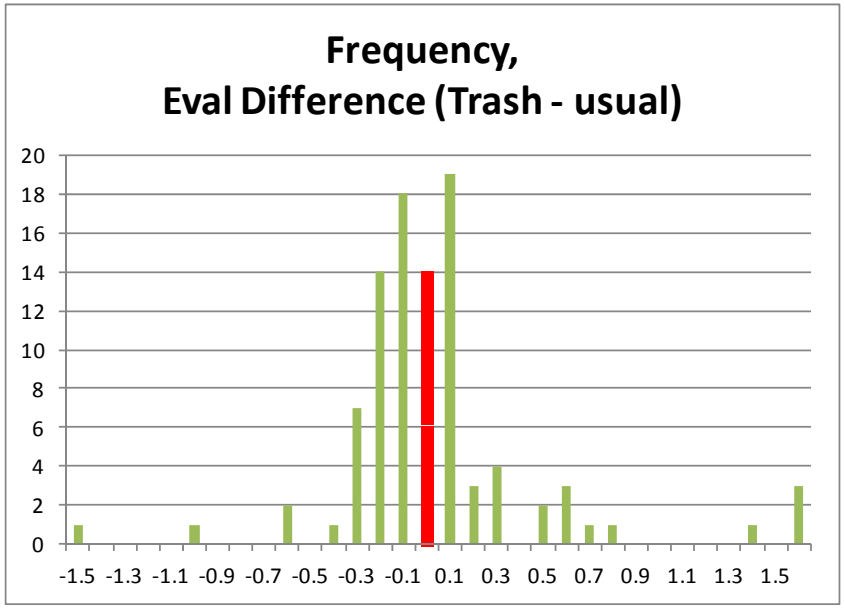
Comparison of Evaluation Distributions









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Conclusion

	Number of Participants	Median Evaluations							Median Eval. Trash	
	Instru-ments	World: Median Evaluation Combined Prop.	Evaluation Micronair	Evaluation Strength	Evaluation Length	Evaluation Uniformit	Evaluation Color Rd	Evaluation Color +b	Trash Cou	Trash Are
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AV 2007-16	112.8	0.47	0.47	0.42	0.39	0.36	0.43	0.45	0.31	0.35
AV 2016	125.0	0.36	0.37	0.33	0.32	0.33	0.25	0.36	0.31	0.35
2016-3	148	0.358	0.34	0.35	0.25	0.31	0.26	0.38	0.31	0.35
...										

- The chosen scale formulas are suitable and provide evaluations on the same level as the official parameters
- Typically the trash evaluation of the single instruments is not deviating too far from the evaluations of the official parameters (70% of the labs not more than +/- 0.2 units)

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4. Alteration of the Database for Including Trash Results

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Trash: Next Steps

- Currently the Trash Evaluation is only included on the shown table in the instrument report.
- Results are not included in the database
  - There is no calculation of the average
  - There is no evaluation histogram
  - Laboratories cannot compare to the Trash Median Evaluation or distribution
- Necessary costs for including the trash evaluation in the database (no part of the annual maintenance)
  - Generation 10: EUR 4000,--

Performance of Instrument: GL163-001-01					
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Summary Evaluation for Each Property				0.31	0.33
Summary Evaluation for all Properties	These parameters are not included				

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5. Include Additional Parameters

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Next Steps

- "Official" parameters, which are part of the Overall Evaluation
  - Micronaire, Strength, Length, L-Uniformity, Color Rd and +b
- Optional parameters, where results are collected, and an evaluation result is calculated and shown
  - Trash Count and Trash Area
- Optional parameters, where results are collected, but no evaluation is calculated or shown
  - Short Fiber Index and Maturity
- Parameters, where no data is collected
  - Elongation, SCI, Color Grade, Moisture Content…

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Next Steps

- It is technically possible to do the same evaluation for SFI and MAT that was now done for Trash.
- Open topics
  - Is it already a suitable to step forward with these parameters?
    - SFI: no valid reference, no practical experience
    - MAT: currently change in MAT result level in AFIS+HVI based on ITMF discussion
  - Is industry willing to step forward?
  - Technical questions have to be solved (no suitable limits given…)
- Proposal
  - Prepare the database for including these parameters
  - It is, when jointly done with Trash, only a small cost addition
    - Generation 10: EUR 1500,--
  - It is possible to prepare these parameters now and wait for the open topics to be solved before these evaluations are activated