



International Cotton Advisory Committee



CSITC Global - Round Trial 2022 - 2 General Evaluation

Section One: Result Distribution
Section Two: Instrument Evaluation
Section Three: Within Limits Evaluation

Section One: Result Distribution

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Mandatory Parameters
-Summary Table
-Distribution Graphs

Optional Parameters
-Summary Table
-Distribution Graphs

Executed By:
Faserinstitut Bremen e.V., Bremen, Germany*
USDA-AMS, Memphis, TN, USA

System Provided by:
Generation 10 Limited



This report is an outcome of the Project CFC/ICAC/33 – CSITC,
which benefitted from support from the Common Fund for Commodities
and the European Union, partners in Commodity Development.



* Faserinstitut Bremen are a Cooperation Partner with ICA Bremen

Global - Round Trial 2022 - 2

Inter-Instrument Averages, Inter-Instrument Variations, Typical within-instrument Variations

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			4.107	5.136	4.137	4.333	
Reference Values for Evaluation			4.107	5.136	4.137	4.333	
Number Of Instruments			99	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.054	0.059	0.060	0.071	0.061
		CV %	1.3	1.2	1.5	1.6	1.4
	based on 6 tests	SD	0.060	0.064	0.067	0.073	0.066
		CV %	1.5	1.2	1.6	1.7	1.5
	based on single tests	SD	0.066	0.072	0.072	0.080	0.072
		CV %	1.6	1.4	1.7	1.8	1.6
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.025	0.022	0.024	0.025	0.024
		CV %	0.6	0.4	0.6	0.6	0.5
	between single tests on one day	SD	0.030	0.035	0.034	0.032	0.033
		CV %	0.7	0.7	0.8	0.7	0.7
	between all tests on different days	SD	0.039	0.040	0.040	0.041	0.040
		CV %	0.9	0.8	1.0	1.0	0.9

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			22.785	28.785	28.629	31.249	
Reference Values for Evaluation			22.785	28.785	28.629	31.249	
Number Of Instruments			99	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.748	0.778	0.825	0.604	0.739
		CV %	3.3	2.7	2.9	1.9	2.7
	based on 6 tests	SD	0.827	0.854	0.889	0.717	0.822
		CV %	3.6	3.0	3.1	2.3	3.0
	based on single tests	SD	0.932	0.986	1.096	1.045	1.015
		CV %	4.1	3.4	3.8	3.3	3.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.325	0.329	0.328	0.360	0.335
		CV %	1.4	1.1	1.1	1.2	1.2
	between single tests on one day	SD	0.516	0.491	0.649	0.631	0.572
		CV %	2.3	1.7	2.3	2.0	2.1
	between all tests on different days	SD	0.608	0.585	0.750	0.758	0.675
		CV %	2.7	2.0	2.6	2.4	2.4

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.9952	1.1094	1.0673	1.1863	
Reference Values for Evaluation			0.9952	1.1094	1.0673	1.1863	
Number Of Instruments			99	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.0083	0.0081	0.0085	0.0093	0.0085
		CV %	0.8	0.7	0.8	0.8	0.8
	based on 6 tests	SD	0.0105	0.0096	0.0102	0.0105	0.0102
		CV %	1.1	0.9	1.0	0.9	0.9
	based on single tests	SD	0.0147	0.0126	0.0144	0.0145	0.0140
		CV %	1.5	1.1	1.3	1.2	1.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0056	0.0049	0.0058	0.0055	0.0054
		CV %	0.6	0.4	0.5	0.5	0.5
	between single tests on one day	SD	0.0101	0.0086	0.0107	0.0103	0.0099
		CV %	1.0	0.8	1.0	0.9	0.9
	between all tests on different days	SD	0.0114	0.0100	0.0118	0.0114	0.0111
		CV %	1.1	0.9	1.1	1.0	1.0

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			77.535	83.271	79.705	83.099	
Reference Values for Evaluation			77.535	83.271	79.705	83.099	
Number Of Instruments			99	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.497	0.491	0.449	0.422	0.465
		CV %	0.6	0.6	0.6	0.5	0.6
	based on 6 tests	SD	0.573	0.536	0.511	0.497	0.529
		CV %	0.7	0.6	0.6	0.6	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.785	0.693	0.767	0.703	0.737
		CV %	1.0	0.8	1.0	0.8	0.9
	between different days with each 6 tests	SD	0.266	0.227	0.241	0.259	0.249
		CV %	0.3	0.3	0.3	0.3	0.3
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.576	0.445	0.554	0.486	0.515
		CV %	0.7	0.5	0.7	0.6	0.6
	between all tests on different days	SD	0.626	0.496	0.630	0.539	0.573
		CV %	0.8	0.6	0.8	0.6	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			76.711	72.978	75.958	74.870	
Reference Values for Evaluation			76.711	72.978	75.958	74.870	
Number Of Instruments			99	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.435	0.483	0.467	0.424	0.452
		CV %	0.6	0.7	0.6	0.6	0.6
	based on 6 tests	SD	0.409	0.503	0.458	0.447	0.455
		CV %	0.5	0.7	0.6	0.6	0.6
Typical within-instrument Variation (Median)	based on single tests	SD	0.420	0.533	0.479	0.458	0.472
		CV %	0.5	0.7	0.6	0.6	0.6
	between different days with each 6 tests	SD	0.111	0.124	0.148	0.163	0.136
		CV %	0.1	0.2	0.2	0.2	0.2
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.108	0.105	0.126	0.124	0.116
		CV %	0.1	0.1	0.2	0.2	0.2
	between all tests on different days	SD	0.182	0.181	0.211	0.236	0.203
		CV %	0.2	0.2	0.3	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			10.263	16.349	10.053	15.040	
Reference Values for Evaluation			10.263	16.349	10.053	15.040	
Number Of Instruments			99	97	98	97	98
Inter-Instrument Variation	based on 30 tests	SD	0.253	0.450	0.215	0.262	0.295
		CV %	2.5	2.8	2.1	1.7	2.3
	based on 6 tests	SD	0.271	0.472	0.231	0.289	0.316
		CV %	2.6	2.9	2.3	1.9	2.4
Typical within-instrument Variation (Median)	based on single tests	SD	0.278	0.493	0.236	0.364	0.343
		CV %	2.7	3.0	2.3	2.4	2.6
	between different days with each 6 tests	SD	0.078	0.095	0.086	0.125	0.096
		CV %	0.8	0.6	0.9	0.8	0.8
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.067	0.068	0.068	0.091	0.073
		CV %	0.7	0.4	0.7	0.6	0.6
	between all tests on different days	SD	0.111	0.140	0.110	0.158	0.130
		CV %	1.1	0.9	1.1	1.0	1.0

Optional Parameters

Inter-Instrument Averages, Inter-Instrument Variations, Typical within-instrument Variations

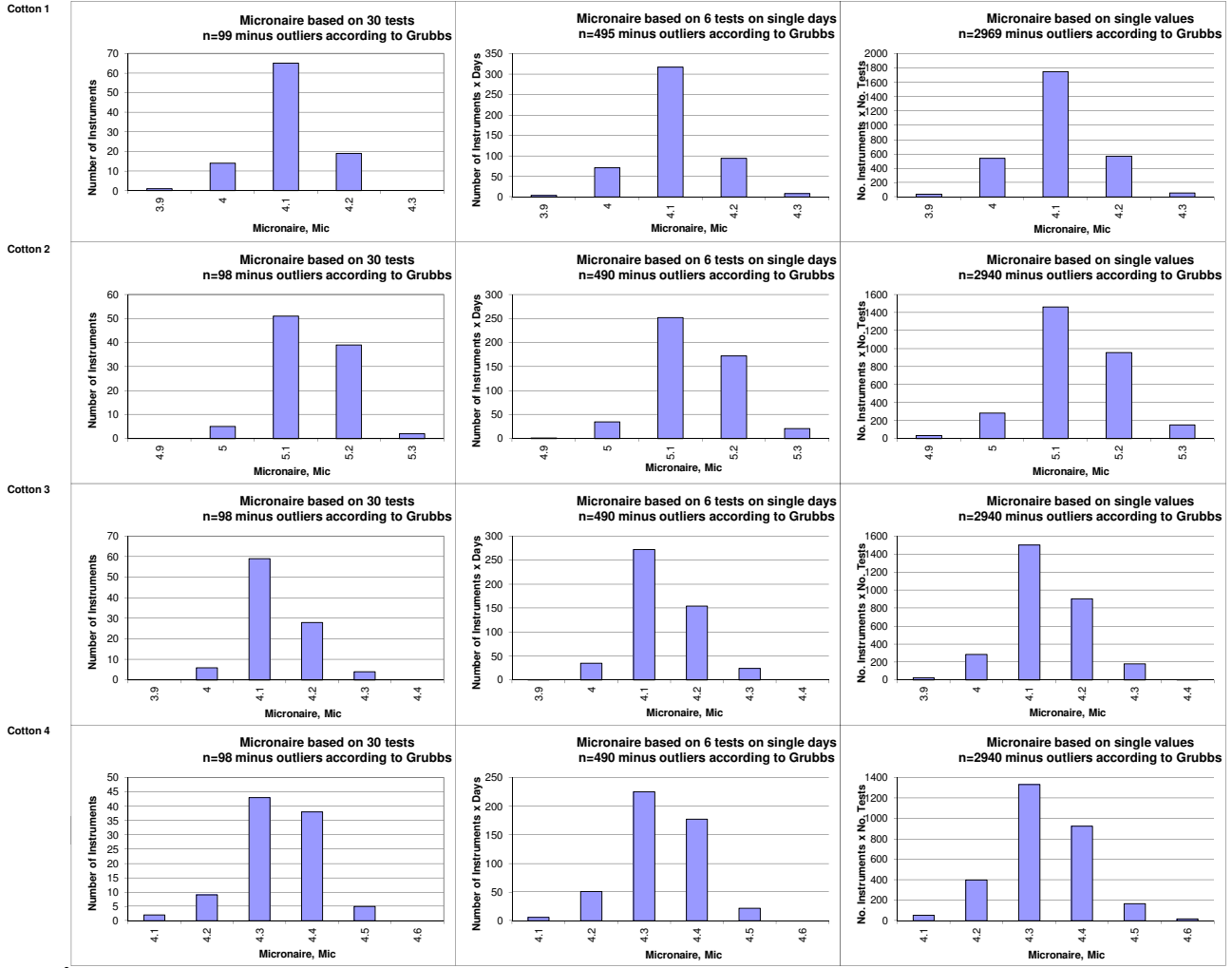
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			17.09	11.44	31.42	10.70	
Reference Values for Evaluation			17.09	11.44	31.42	10.70	
Number Of Instruments			78	78	78	78	78
Inter-Instrument Variation	based on 30 tests	SD	4.09	3.28	6.90	3.10	4.34
		CV %	23.9	28.7	22.0	29.0	25.9
	based on 6 tests	SD	4.45	3.58	7.60	3.38	4.75
		CV %	26.0	31.3	24.2	31.6	28.3
	based on single tests	SD	5.13	3.98	8.13	3.78	5.26
		CV %	30.0	34.8	25.9	35.4	31.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.58	1.35	2.56	1.25	1.69
		CV %	9.2	11.8	8.1	11.7	10.2
	between single tests on one day	SD	2.14	1.58	2.92	1.56	2.05
		CV %	12.5	13.8	9.3	14.5	12.5
	between all tests on different days	SD	2.86	2.35	4.11	2.30	2.90
		CV %	16.7	20.5	13.1	21.5	18.0

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.187	0.109	0.312	0.097	
Reference Values for Evaluation			0.187	0.109	0.312	0.097	
Number Of Instruments			78	78	78	78	78
Inter-Instrument Variation	based on 30 tests	SD	0.051	0.022	0.062	0.019	0.039
		CV %	27.4	20.3	19.8	20.0	21.9
	based on 6 tests	SD	0.062	0.030	0.080	0.023	0.049
		CV %	33.0	27.4	25.8	23.4	27.4
	based on single tests	SD	0.069	0.033	0.091	0.026	0.055
		CV %	36.9	30.3	29.1	26.9	30.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.023	0.014	0.038	0.013	0.022
		CV %	12.3	12.7	12.3	13.1	12.6
	between single tests on one day	SD	0.027	0.014	0.041	0.013	0.024
		CV %	14.5	12.8	13.1	13.5	13.5
	between all tests on different days	SD	0.046	0.026	0.067	0.020	0.040
		CV %	24.6	23.6	21.4	21.0	22.7

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.31	87.47	86.05	86.12	
Reference Values for Evaluation			85.31	87.47	86.05	86.12	
Number Of Instruments			77	76	76	76	76
Inter-Instrument Variation	based on 30 tests	SD	0.75	0.79	0.69	0.72	0.74
		CV %	0.9	0.9	0.8	0.8	0.9
	based on 6 tests	SD	0.74	0.84	0.73	0.74	0.76
		CV %	0.9	1.0	0.8	0.9	0.9
	based on single tests	SD	0.79	0.88	0.77	0.79	0.81
		CV %	0.9	1.0	0.9	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.09	0.07	0.09	0.12	0.09
		CV %	0.1	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.16	0.09	0.11	0.15	0.13
		CV %	0.2	0.1	0.1	0.2	0.2
	between all tests on different days	SD	0.31	0.18	0.22	0.25	0.24
		CV %	0.4	0.2	0.3	0.3	0.3

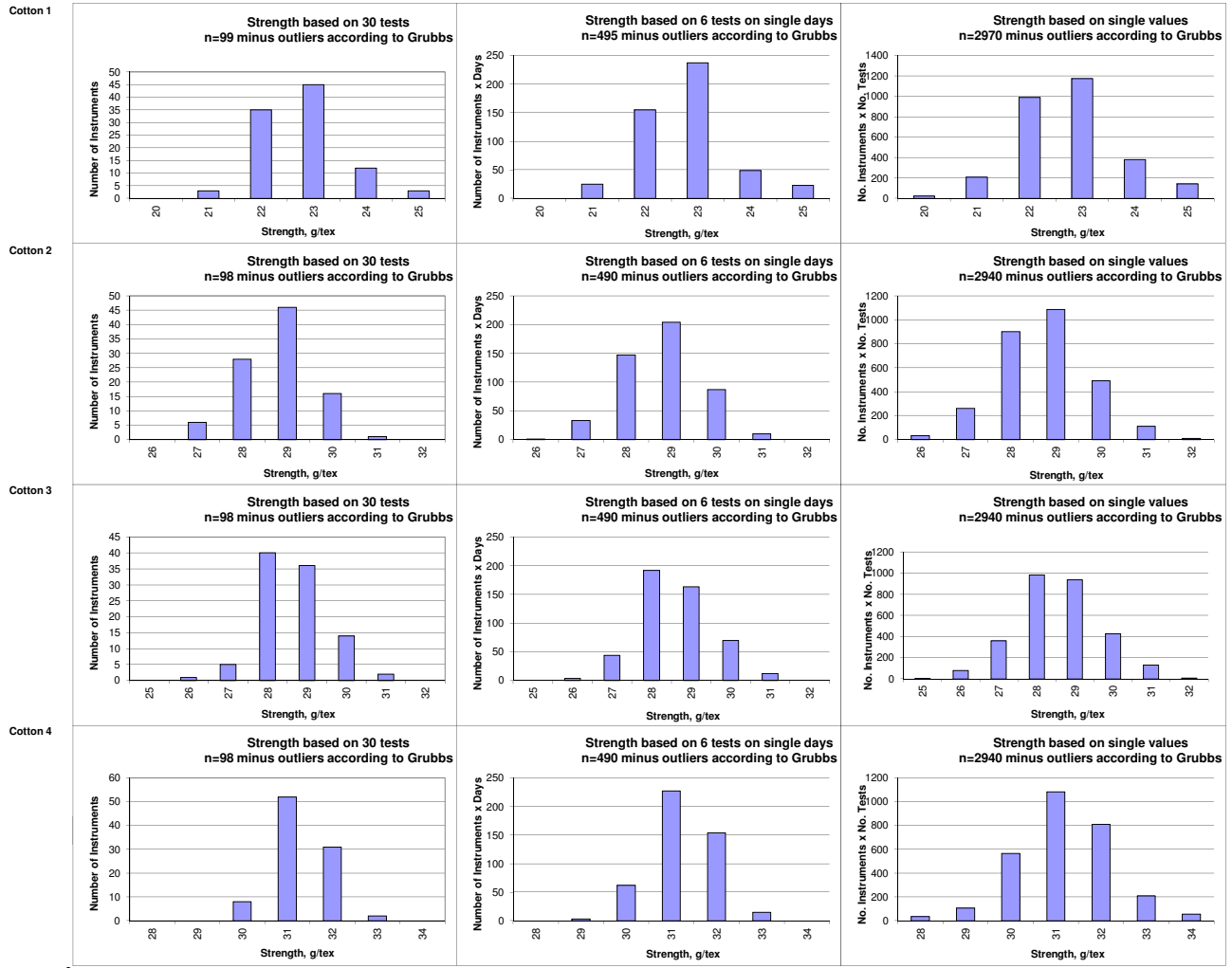
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			15.66	7.71	11.53	7.77	
Reference Values for Evaluation			15.66	7.71	11.53	7.77	
Number Of Instruments			83	82	82	82	82
Inter-Instrument Variation	based on 30 tests	SD	2.45	0.83	1.64	0.80	1.43
		CV %	15.6	10.8	14.3	10.3	12.8
	based on 6 tests	SD	2.50	0.87	1.59	0.83	1.45
		CV %	16.0	11.3	13.8	10.6	12.9
	based on single tests	SD	2.62	0.96	1.74	0.89	1.55
		CV %	16.7	12.5	15.1	11.4	13.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.47	0.20	0.32	0.20	0.30
		CV %	3.0	2.5	2.8	2.6	2.7
	between single tests on one day	SD	0.78	0.36	0.63	0.35	0.53
		CV %	5.0	4.7	5.5	4.5	4.9
	between all tests on different days	SD	0.92	0.42	0.71	0.39	0.61
		CV %	5.9	5.4	6.1	5.1	5.6

Test Result Distributions
Micronaire



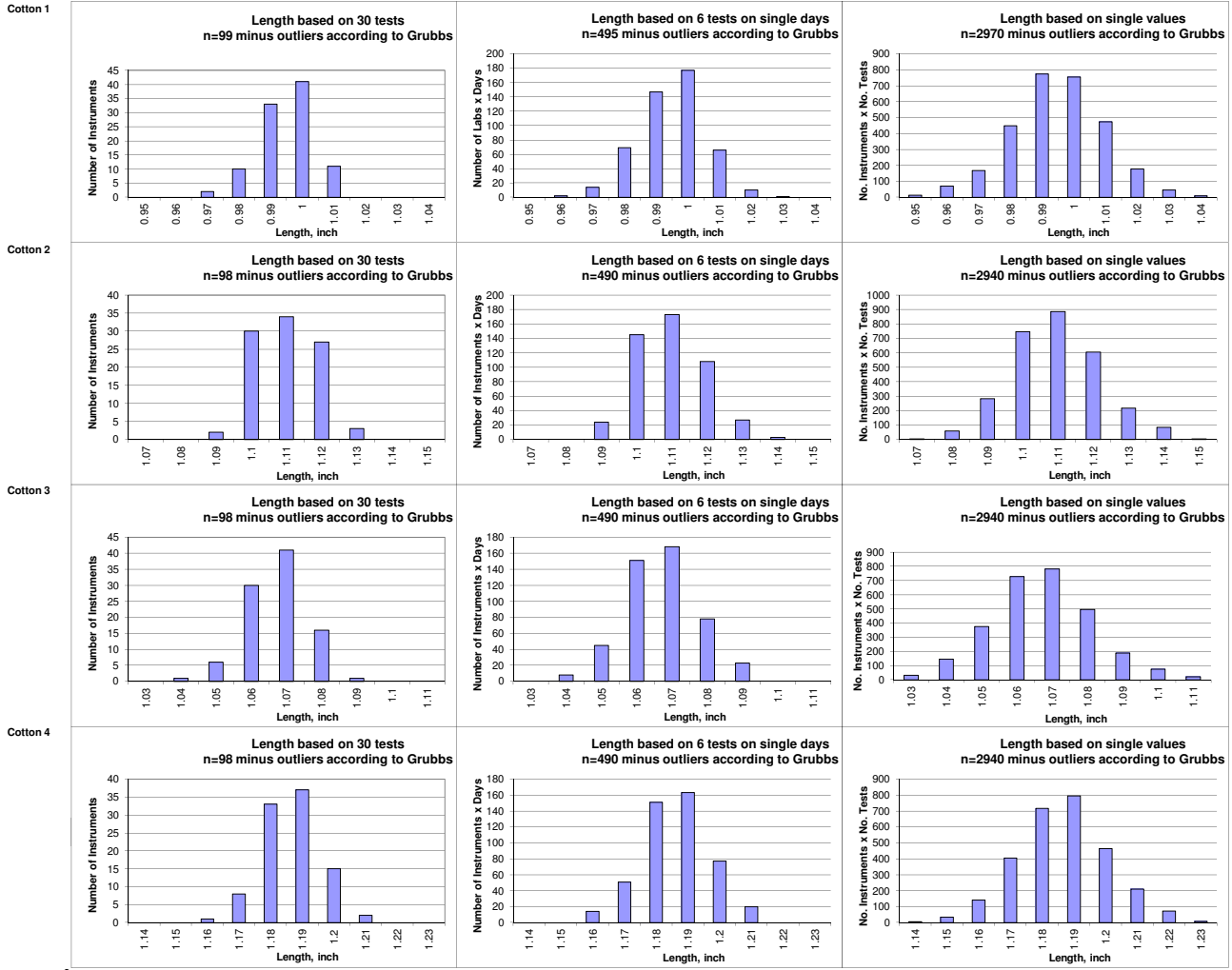
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



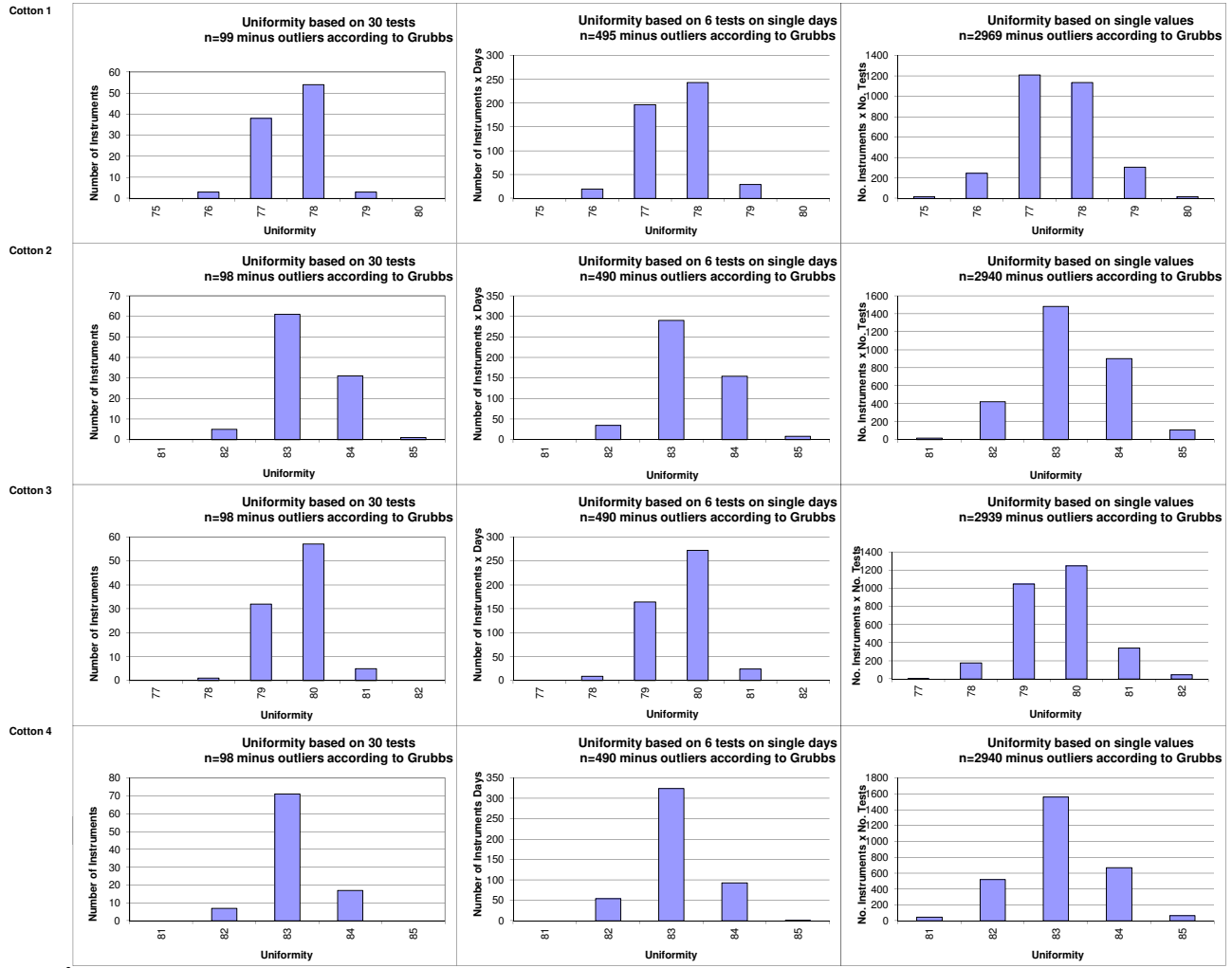
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



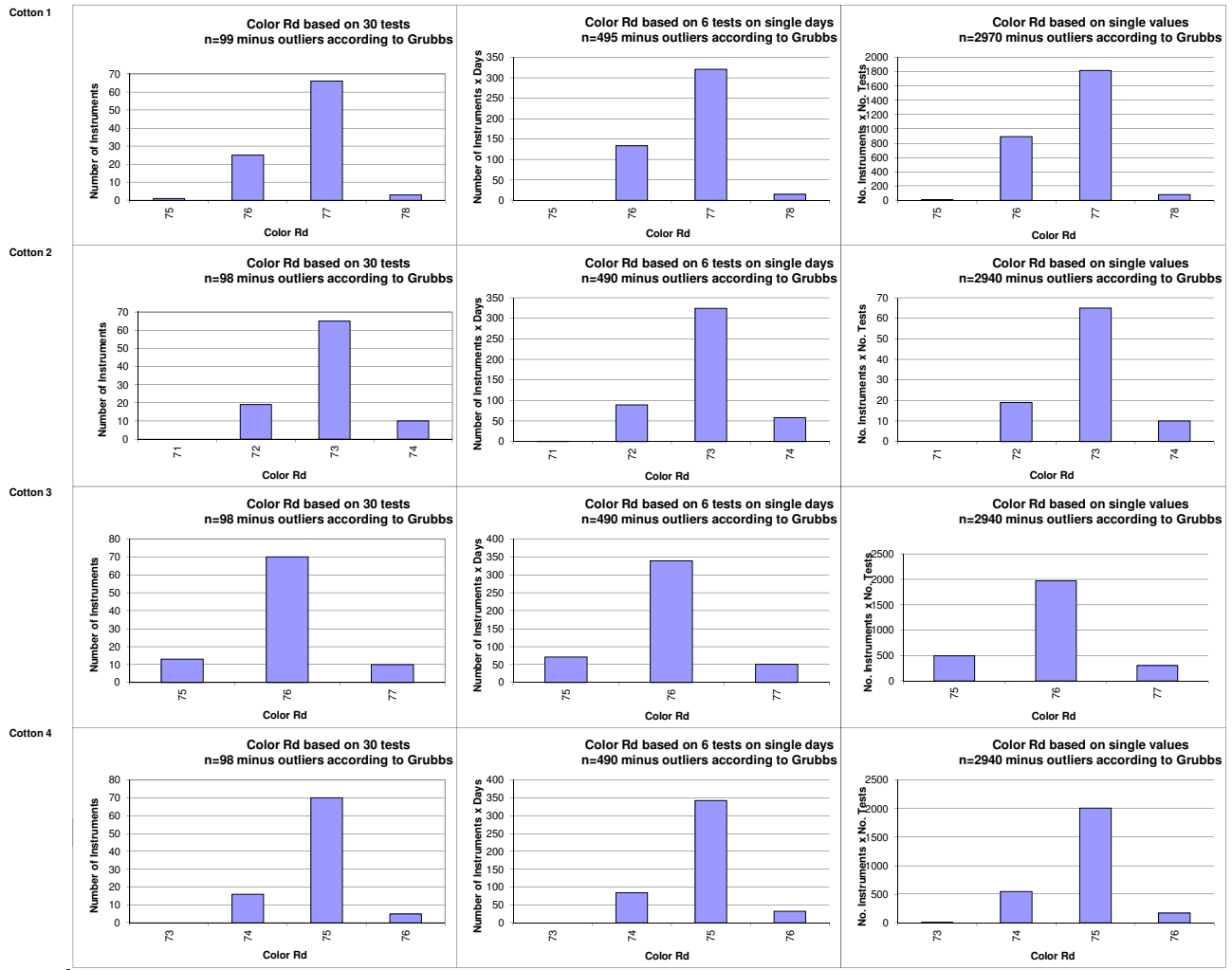
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



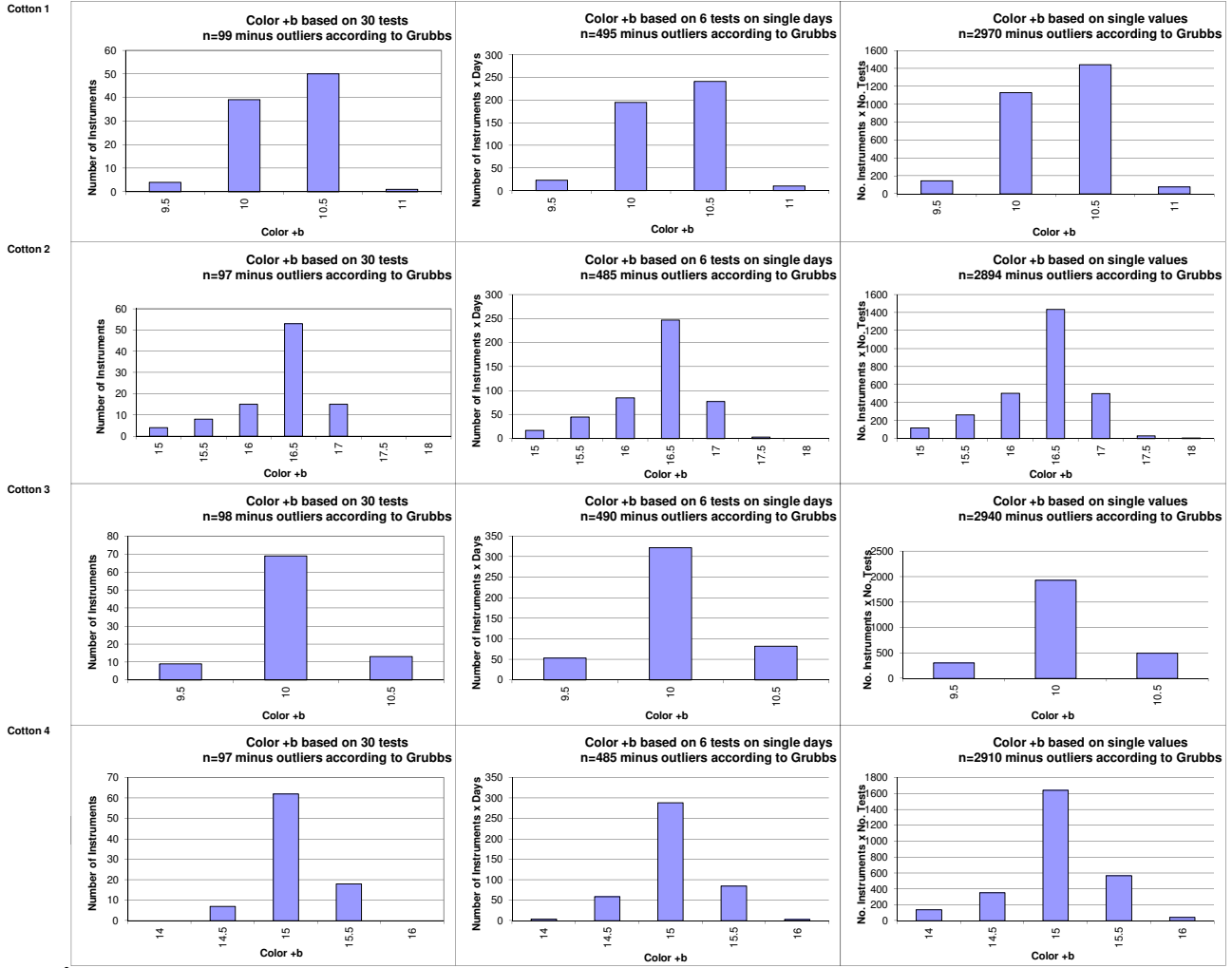
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



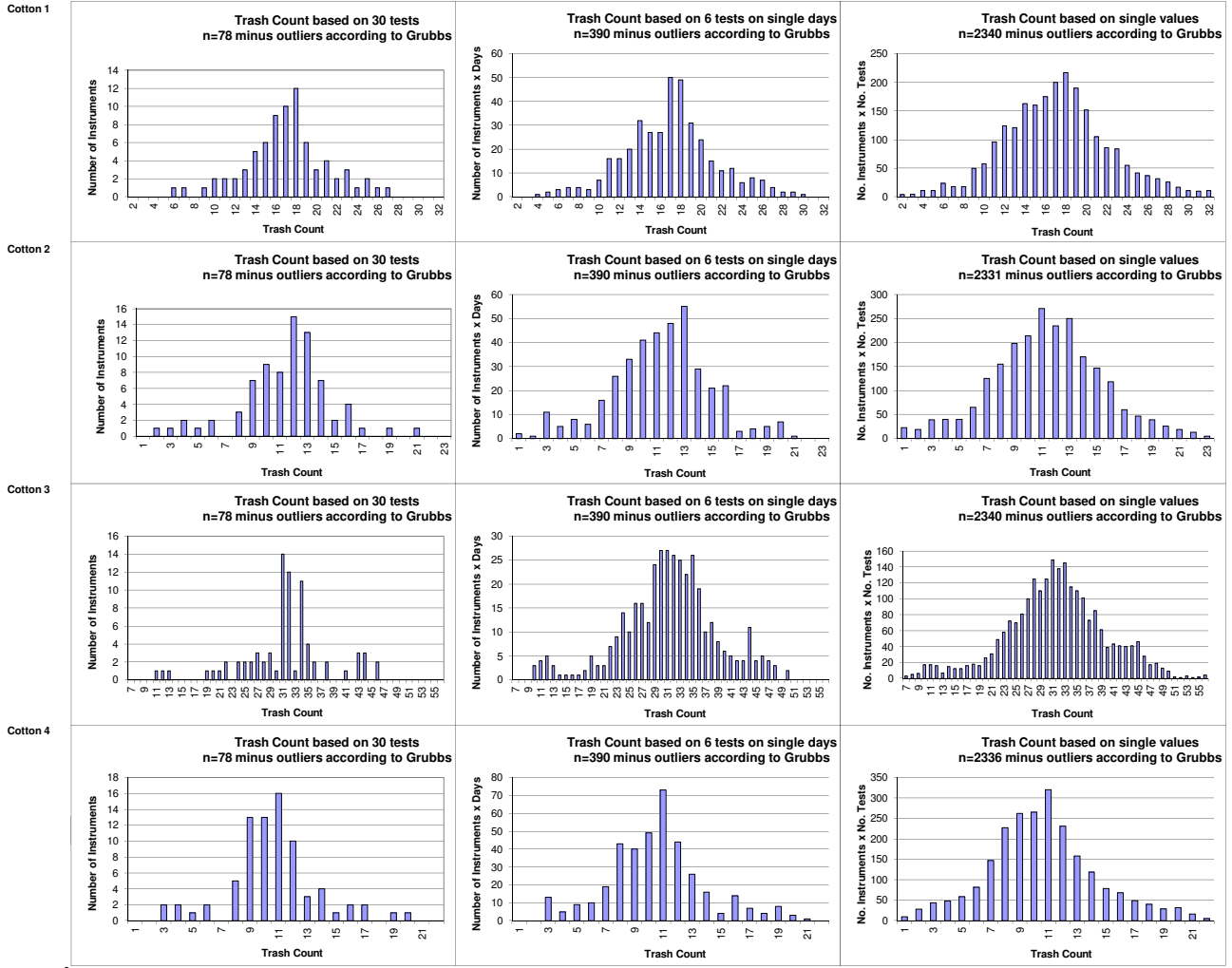
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(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



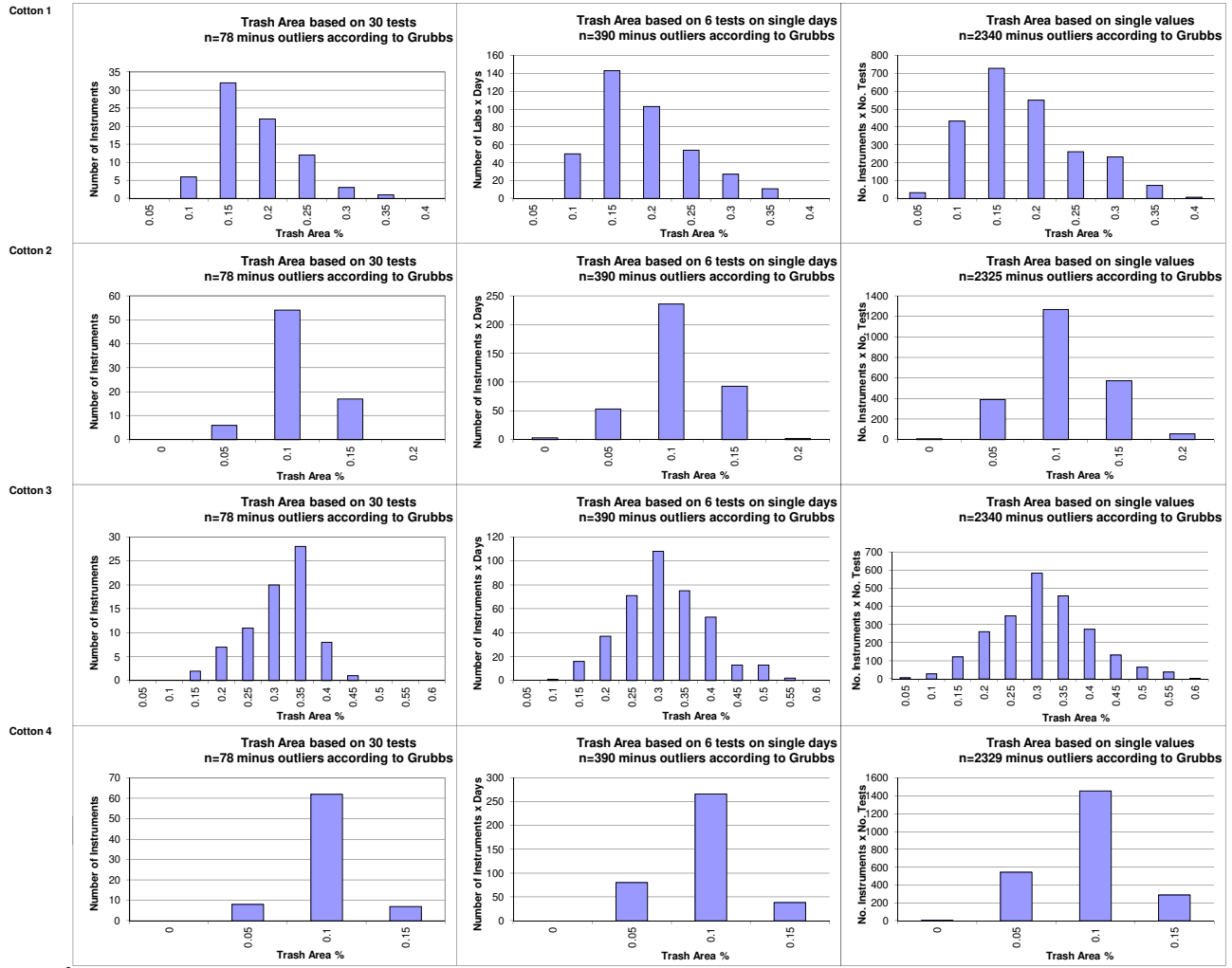
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



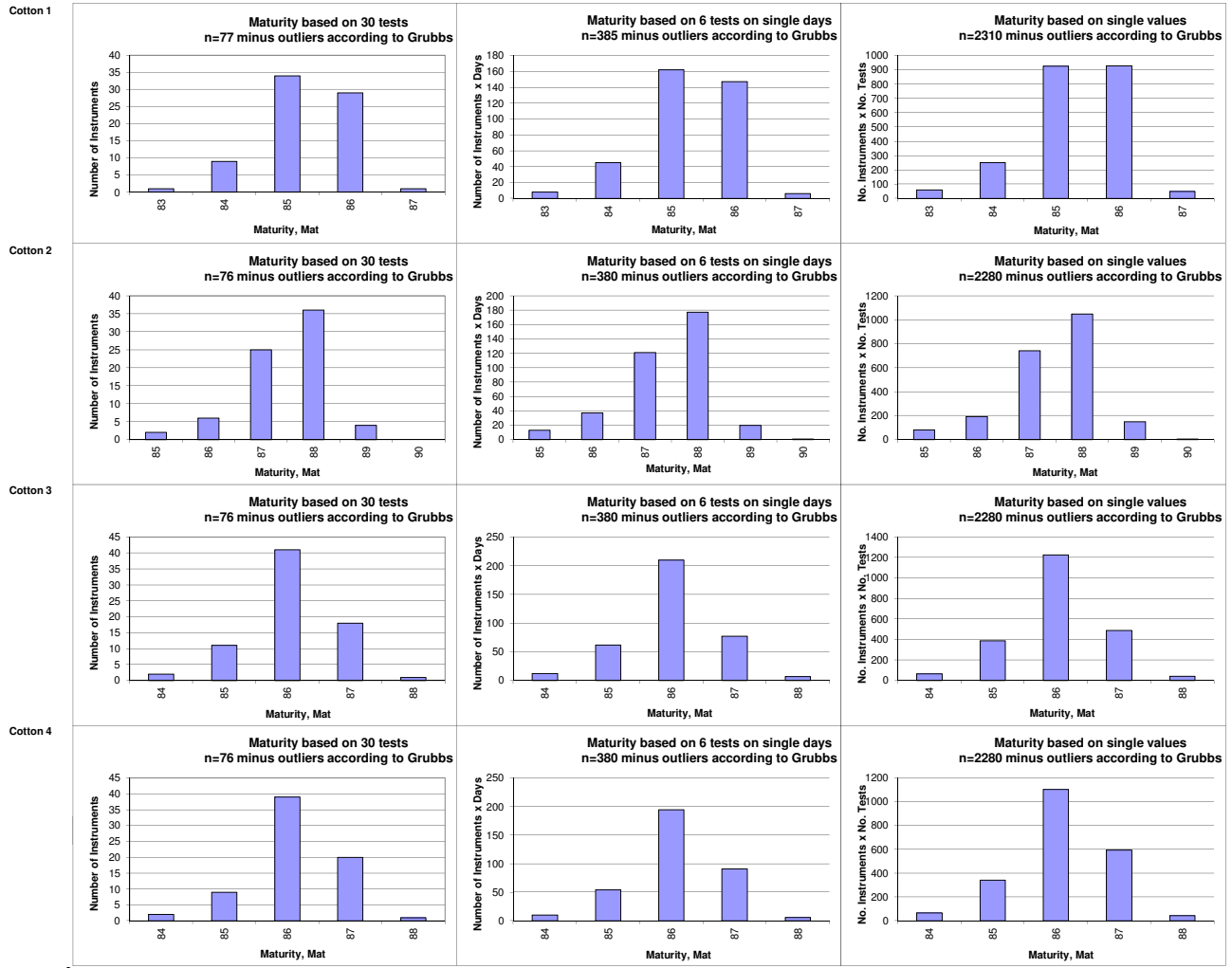
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



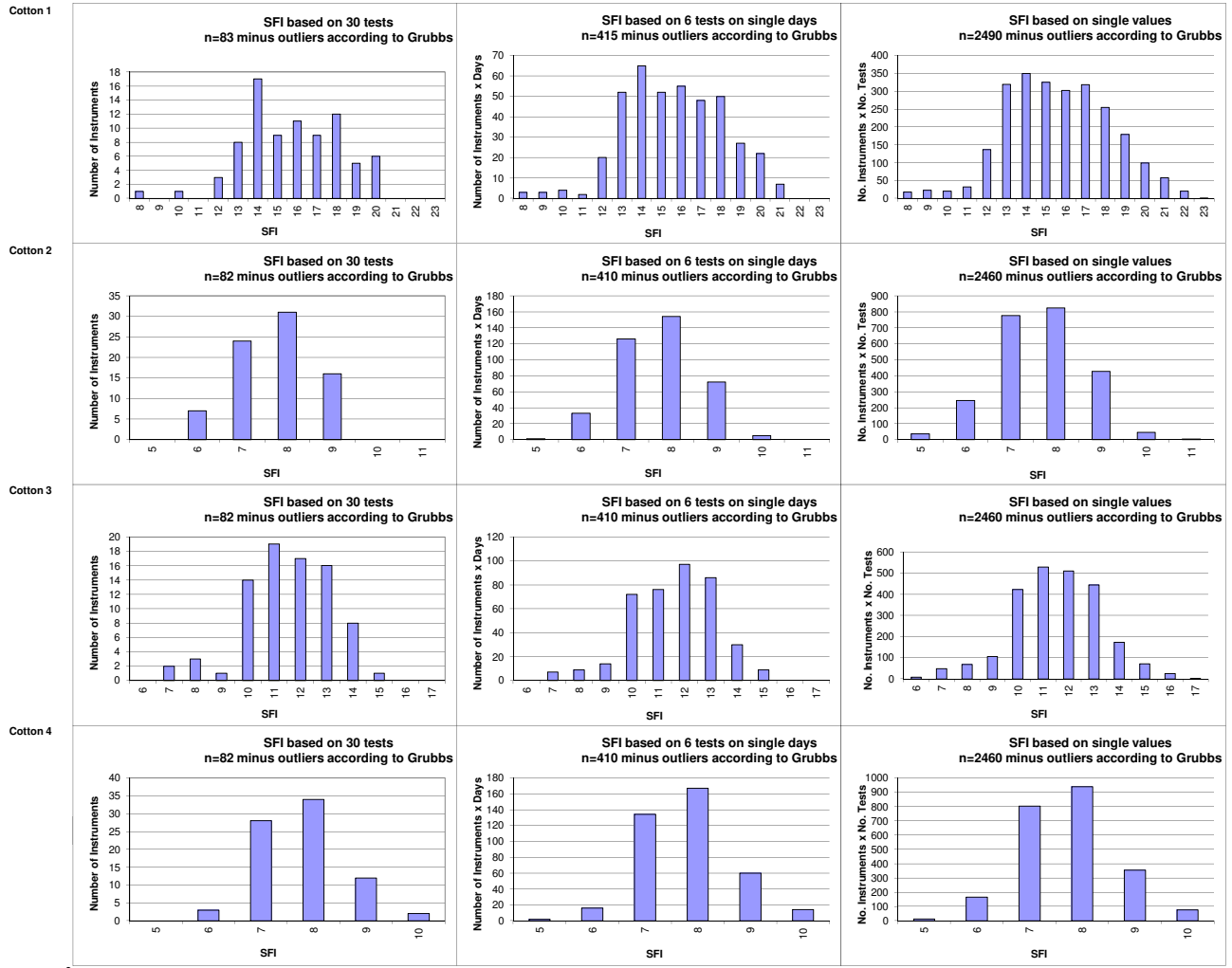
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Maturity



(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
SFI



(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)



International Cotton Advisory Committee



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Section One: Result Distribution
Section Two: Instrument Evaluation
Section Three: Within Limits Evaluation

Section Two: Instrument Evaluation

Content:

- Evaluation of Combined Parameters
- Evaluation of Single Parameters

Executed By:
Faserinstitut Bremen e.V., Bremen, Germany*
USDA-AMS, Memphis, TN, USA

System Provided by:
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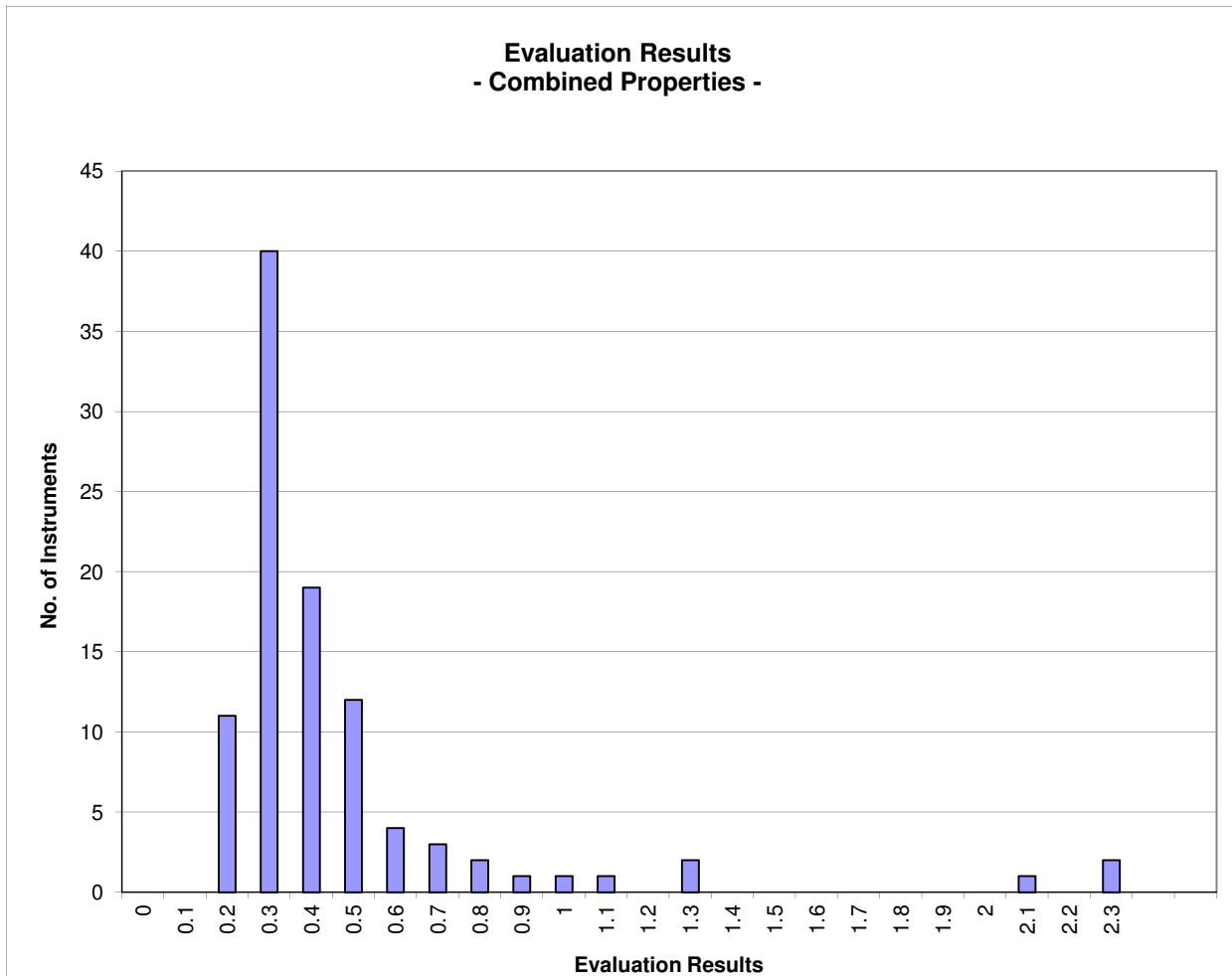
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Instrument Evaluation
 - Graph of Combined Properties -
 According to ICAC CSITC Task Force Recommendations
 Global - Round Trial 2022 - 2

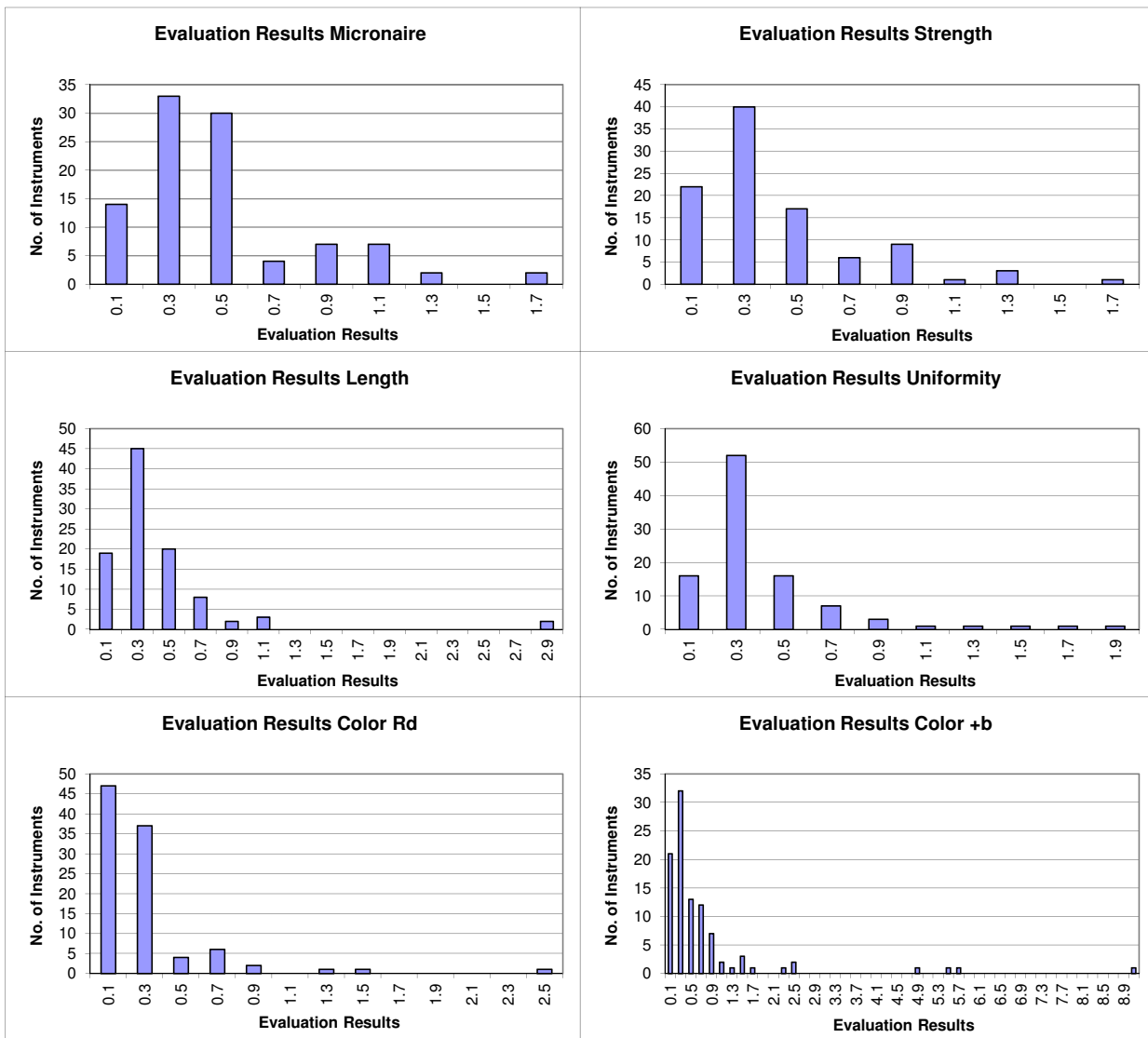
		Evaluation Combined Prop.
Statistics	Average	0.47
	Median	0.35
	Best Instrument	0.16
	Worst Instrument	2.29



x-Axis shows midpoints of classes
 The evaluation results are entered based on the unrounded values
 (classes are defined as > lower limit and <= upper limit)

Instrument Evaluation
 - Graph of Single Properties -
 According to ICAC CSITC Task Force Recommendations
 Global - Round Trial 2022 - 2

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.50	0.42	0.41	0.40	0.31	0.76
	Median	0.41	0.33	0.30	0.34	0.21	0.34
	Best Instr.	0.05	0.04	0.05	0.04	0.04	0.10
	Worst Instr.	1.71	1.78	2.92	1.84	2.49	9.19



x-Axis shows midpoints of classes
 The evaluation results are entered based on the unrounded values



International Cotton Advisory Committee



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Section Three: Within Limits Evaluation

Content:

- Based on Average of 30 Test Results
- Based on Single Test Results

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Within Limits Evaluation

Based on average of 30 test results for each sample

	Micronaire	Strength	Length	Uniformity	Color Rd	Color +b
Limits	0.20	2.0	0.030	2.0	1.5	0.5
	units	g/tex	inch	%	units	units
Average % Results within Limits	98.7	97.2	98.0	99.0	95.7	83.1
Completely within limits	96.0	92.9	93.9	98.0	91.9	68.7
% of Instruments $\geq 75\%$ within limits	99.0	96.0	98.0	98.0	93.9	79.8
% of Instruments $\geq 50\%$ within limits	100.0	100.0	100.0	100.0	98.0	89.9

Within Limits Evaluation

Based on Single Test Results

	Micronaire	Strength	Length	Uniformity	Color Rd	Color +b
Limits	0.20	2.0	0.030	2.0	1.5	0.5
	units	g/tex	inch	%	units	units
Average % Results within Limits	97.9	92.3	95.9	97.5	94.7	80.7
% of Instruments 100% within limits	62.6	25.3	40.4	61.6	73.7	37.4
% of Instruments $\geq 95\%$ within limits	87.9	66.7	81.8	88.9	84.8	54.5
% of Instruments $\geq 75\%$ within limits	99.0	87.9	97.0	97.0	90.9	72.7
% of Instruments $\geq 65\%$ within limits	100.0	96.0	98.0	98.0	93.9	79.8
% of Instruments $\geq 50\%$ within limits	100.0	99.0	100.0	100.0	97.0	86.9