



International Cotton Advisory Committee



CSITC Global - Round Trial 2021 - 1 General Evaluation

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

Section One: Result Distribution

Content:

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 2021 - 1

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

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			4.451	4.951	4.561	4.156	
Reference Values for Evaluation			4.451	4.951	4.561	4.156	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.043	0.054	0.059	0.056	0.053
		CV %	1.0	1.1	1.3	1.3	1.2
	based on 6 tests	SD	0.049	0.062	0.061	0.059	0.058
		CV %	1.1	1.2	1.3	1.4	1.3
	based on single tests	SD	0.057	0.068	0.072	0.066	0.066
		CV %	1.3	1.4	1.6	1.6	1.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.022	0.023	0.028	0.023	0.024
		CV %	0.5	0.5	0.6	0.6	0.5
	between single tests on one day	SD	0.031	0.031	0.037	0.032	0.033
		CV %	0.7	0.6	0.8	0.8	0.7
	between all tests on different days	SD	0.041	0.039	0.046	0.039	0.041
		CV %	0.9	0.8	1.0	0.9	0.9

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			34.629	26.430	27.853	24.238	
Reference Values for Evaluation			34.629	26.430	27.853	24.238	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.733	0.671	0.501	0.791	0.674
		CV %	2.1	2.5	1.8	3.3	2.4
	based on 6 tests	SD	0.715	0.701	0.615	0.795	0.706
		CV %	2.1	2.7	2.2	3.3	2.6
	based on single tests	SD	0.978	0.843	0.888	0.926	0.909
		CV %	2.8	3.2	3.2	3.8	3.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.409	0.295	0.320	0.285	0.327
		CV %	1.2	1.1	1.1	1.2	1.2
	between single tests on one day	SD	0.574	0.504	0.644	0.465	0.547
		CV %	1.7	1.9	2.3	1.9	1.9
	between all tests on different days	SD	0.696	0.580	0.745	0.547	0.642
		CV %	2.0	2.2	2.7	2.3	2.3

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.2093	1.0477	1.0638	1.0013	
Reference Values for Evaluation			1.2093	1.0477	1.0638	1.0013	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.0094	0.0097	0.0079	0.0118	0.0097
		CV %	0.8	0.9	0.7	1.2	0.9
	based on 6 tests	SD	0.0113	0.0111	0.0095	0.0110	0.0107
		CV %	0.9	1.1	0.9	1.1	1.0
	based on single tests	SD	0.0144	0.0142	0.0137	0.0146	0.0142
		CV %	1.2	1.4	1.3	1.5	1.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0051	0.0055	0.0051	0.0052	0.0052
		CV %	0.4	0.5	0.5	0.5	0.5
	between single tests on one day	SD	0.0095	0.0093	0.0106	0.0088	0.0096
		CV %	0.8	0.9	1.0	0.9	0.9
	between all tests on different days	SD	0.0105	0.0109	0.0115	0.0103	0.0108
		CV %	0.9	1.0	1.1	1.0	1.0

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			83.577	78.840	80.572	80.097	
Reference Values for Evaluation			83.577	78.840	80.572	80.097	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.413	0.491	0.365	0.519	0.447
		CV %	0.5	0.6	0.5	0.6	0.6
	based on 6 tests	SD	0.488	0.593	0.501	0.582	0.541
		CV %	0.6	0.8	0.6	0.7	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.643	0.785	0.744	0.752	0.731
		CV %	0.8	1.0	0.9	0.9	0.9
	between different days with each 6 tests	SD	0.213	0.309	0.307	0.250	0.269
		CV %	0.3	0.4	0.4	0.3	0.3
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.434	0.525	0.536	0.507	0.501
		CV %	0.5	0.7	0.7	0.6	0.6
	between all tests on different days	SD	0.487	0.595	0.608	0.560	0.563
		CV %	0.6	0.8	0.8	0.7	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			76.743	78.481	75.633	74.068	
Reference Values for Evaluation			76.743	78.481	75.633	74.068	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.457	0.613	0.437	0.431	0.485
		CV %	0.6	0.8	0.6	0.6	0.6
	based on 6 tests	SD	0.474	0.645	0.487	0.477	0.521
		CV %	0.6	0.8	0.6	0.6	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.494	0.675	0.516	0.527	0.553
		CV %	0.6	0.9	0.7	0.7	0.7
	between different days with each 6 tests	SD	0.162	0.169	0.203	0.184	0.180
		CV %	0.2	0.2	0.3	0.2	0.2
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.132	0.149	0.179	0.130	0.147
		CV %	0.2	0.2	0.2	0.2	0.2
	between all tests on different days	SD	0.217	0.252	0.304	0.231	0.251
		CV %	0.3	0.3	0.4	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			12.739	8.730	7.631	14.042	
Reference Values for Evaluation			12.739	8.730	7.631	14.042	
Number Of Instruments			77	77	77	77	77
Inter-Instrument Variation	based on 30 tests	SD	0.274	0.339	0.249	0.263	0.281
		CV %	2.2	3.9	3.3	1.9	2.8
	based on 6 tests	SD	0.286	0.350	0.259	0.278	0.293
		CV %	2.2	4.0	3.4	2.0	2.9
Typical within-instrument Variation (Median)	based on single tests	SD	0.306	0.356	0.287	0.295	0.311
		CV %	2.4	4.1	3.8	2.1	3.1
	between different days with each 6 tests	SD	0.094	0.081	0.081	0.099	0.089
		CV %	0.7	0.9	1.1	0.7	0.9
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.078	0.065	0.071	0.070	0.071
		CV %	0.6	0.7	0.9	0.5	0.7
	between all tests on different days	SD	0.145	0.118	0.117	0.135	0.129
		CV %	1.1	1.4	1.5	1.0	1.2

Optional Parameters

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

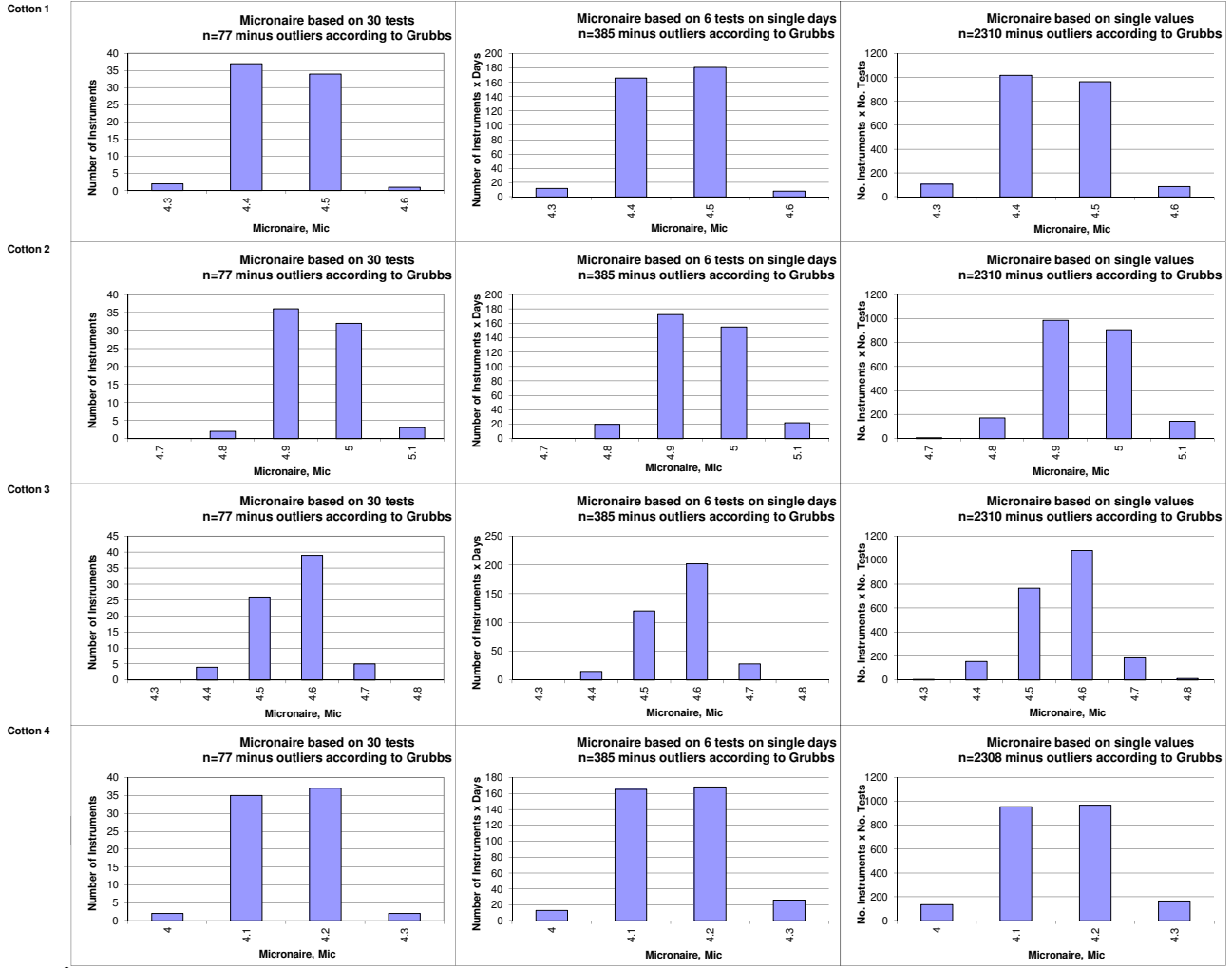
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			17.42	14.65	24.25	19.20	
Reference Values for Evaluation			17.42	14.65	24.25	19.20	
Number Of Instruments			62	62	62	62	62
Inter-Instrument Variation	based on 30 tests	SD	5.05	4.57	6.12	4.42	5.04
		CV %	29.0	31.2	25.2	23.0	27.1
	based on 6 tests	SD	5.55	4.96	6.11	4.86	5.37
		CV %	31.9	33.8	25.2	25.3	29.0
	based on single tests	SD	6.19	5.31	6.85	5.67	6.00
		CV %	35.5	36.2	28.2	29.5	32.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.71	1.56	2.17	1.88	1.83
		CV %	9.8	10.6	8.9	9.8	9.8
	between single tests on one day	SD	2.14	1.86	2.73	2.32	2.26
		CV %	12.3	12.7	11.3	12.1	12.1
	between all tests on different days	SD	2.97	2.57	4.04	3.16	3.18
		CV %	17.0	17.5	16.7	16.4	16.9

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.145	0.133	0.283	0.260	
Reference Values for Evaluation			0.145	0.133	0.283	0.260	
Number Of Instruments			62	62	62	62	62
Inter-Instrument Variation	based on 30 tests	SD	0.034	0.034	0.072	0.062	0.051
		CV %	23.3	25.8	25.5	23.9	24.6
	based on 6 tests	SD	0.036	0.037	0.085	0.076	0.059
		CV %	24.9	27.7	30.1	29.2	28.0
	based on single tests	SD	0.043	0.041	0.101	0.091	0.069
		CV %	29.9	30.5	35.7	35.1	32.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.020	0.016	0.046	0.038	0.030
		CV %	14.1	12.0	16.2	14.5	14.2
	between single tests on one day	SD	0.021	0.017	0.042	0.047	0.032
		CV %	14.1	12.5	14.9	18.1	14.9
	between all tests on different days	SD	0.031	0.027	0.072	0.067	0.049
		CV %	21.4	20.4	25.6	25.9	23.3

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			86.03	88.00	87.10	85.31	
Reference Values for Evaluation			86.03	88.00	87.10	85.31	
Number Of Instruments			55	55	55	55	55
Inter-Instrument Variation	based on 30 tests	SD	0.55	0.67	0.50	0.55	0.57
		CV %	0.6	0.8	0.6	0.6	0.7
	based on 6 tests	SD	0.56	0.66	0.47	0.56	0.56
		CV %	0.6	0.7	0.5	0.7	0.6
	based on single tests	SD	0.70	0.68	0.50	0.60	0.62
		CV %	0.8	0.8	0.6	0.7	0.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.07	0.07	0.11	0.12	0.09
		CV %	0.1	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.10	0.08	0.11	0.14	0.11
		CV %	0.1	0.1	0.1	0.2	0.1
	between all tests on different days	SD	0.17	0.17	0.20	0.25	0.20
		CV %	0.2	0.2	0.2	0.3	0.2

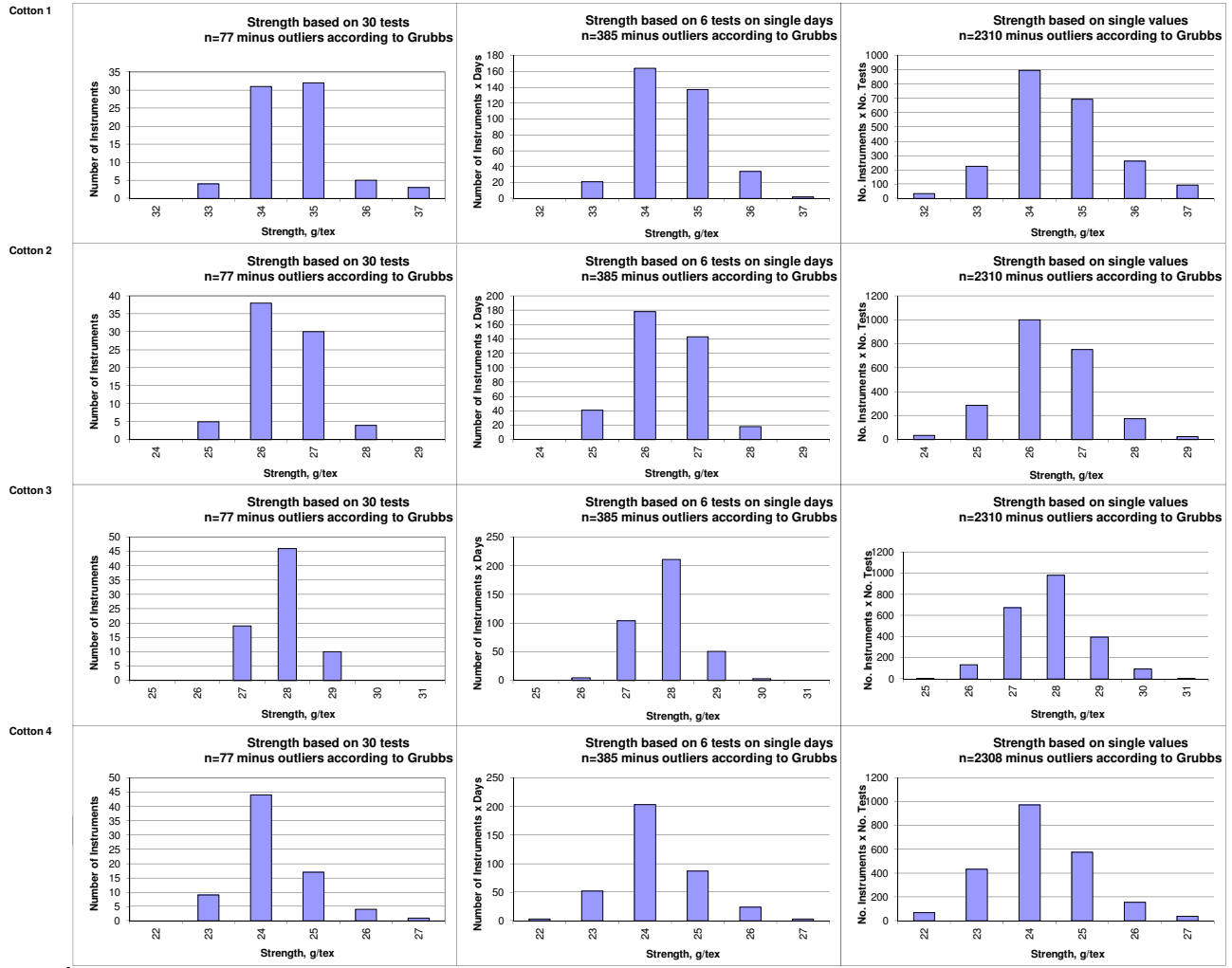
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			6.85	13.11	11.07	12.36	
Reference Values for Evaluation			6.85	13.11	11.07	12.36	
Number Of Instruments			64	64	64	64	64
Inter-Instrument Variation	based on 30 tests	SD	0.86	1.57	1.18	1.27	1.22
		CV %	12.5	12.0	10.7	10.3	11.4
	based on 6 tests	SD	0.84	1.25	1.21	1.27	1.14
		CV %	12.3	9.6	10.9	10.3	10.8
	based on single tests	SD	0.93	1.61	1.33	1.42	1.32
		CV %	13.6	12.3	12.1	11.5	12.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.14	0.38	0.35	0.40	0.32
		CV %	2.1	2.9	3.2	3.3	2.9
	between single tests on one day	SD	0.30	0.66	0.66	0.66	0.57
		CV %	4.4	5.0	6.0	5.4	5.2
	between all tests on different days	SD	0.33	0.76	0.75	0.75	0.65
		CV %	4.9	5.8	6.8	6.1	5.9

Test Result Distributions
Micronaire



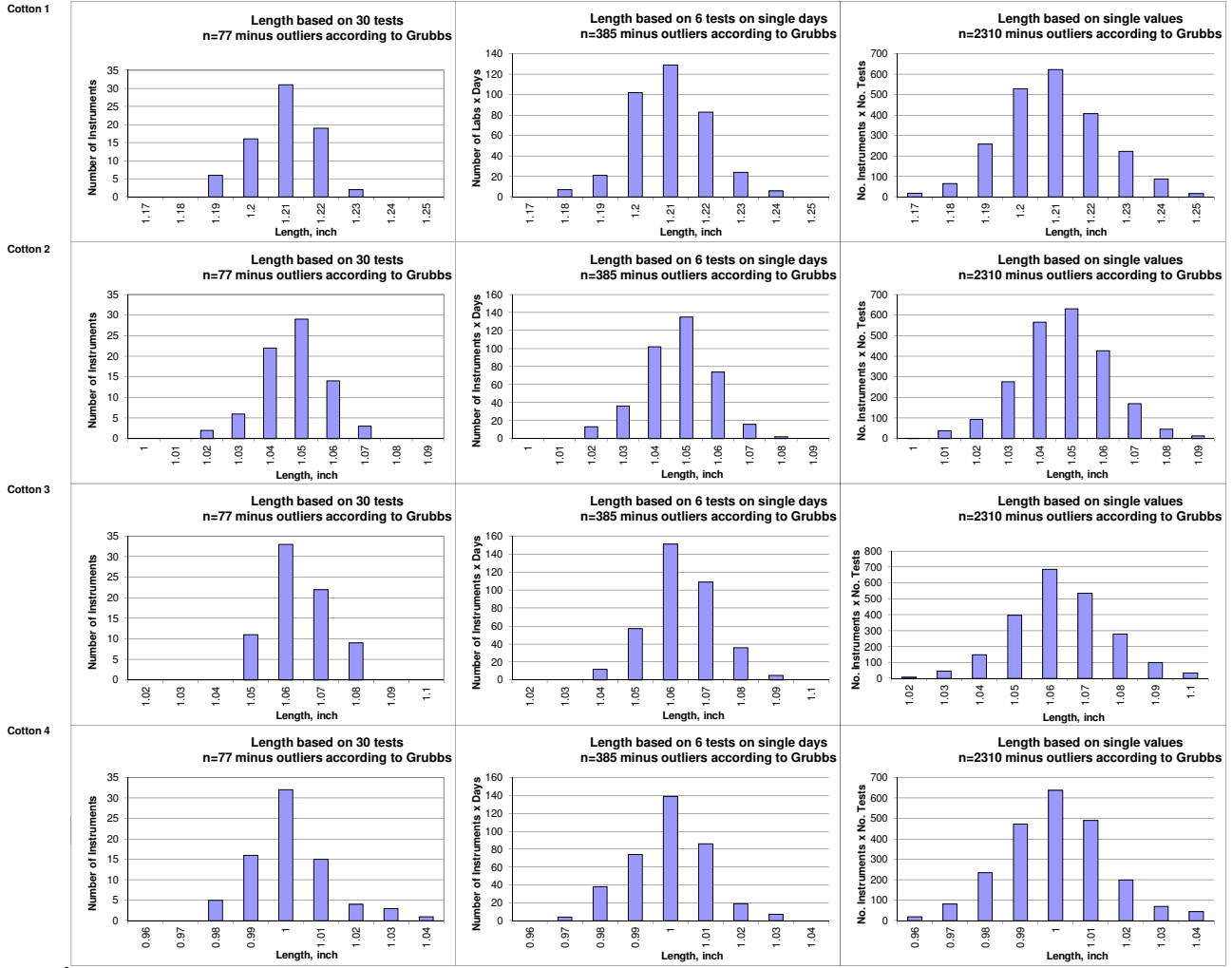
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



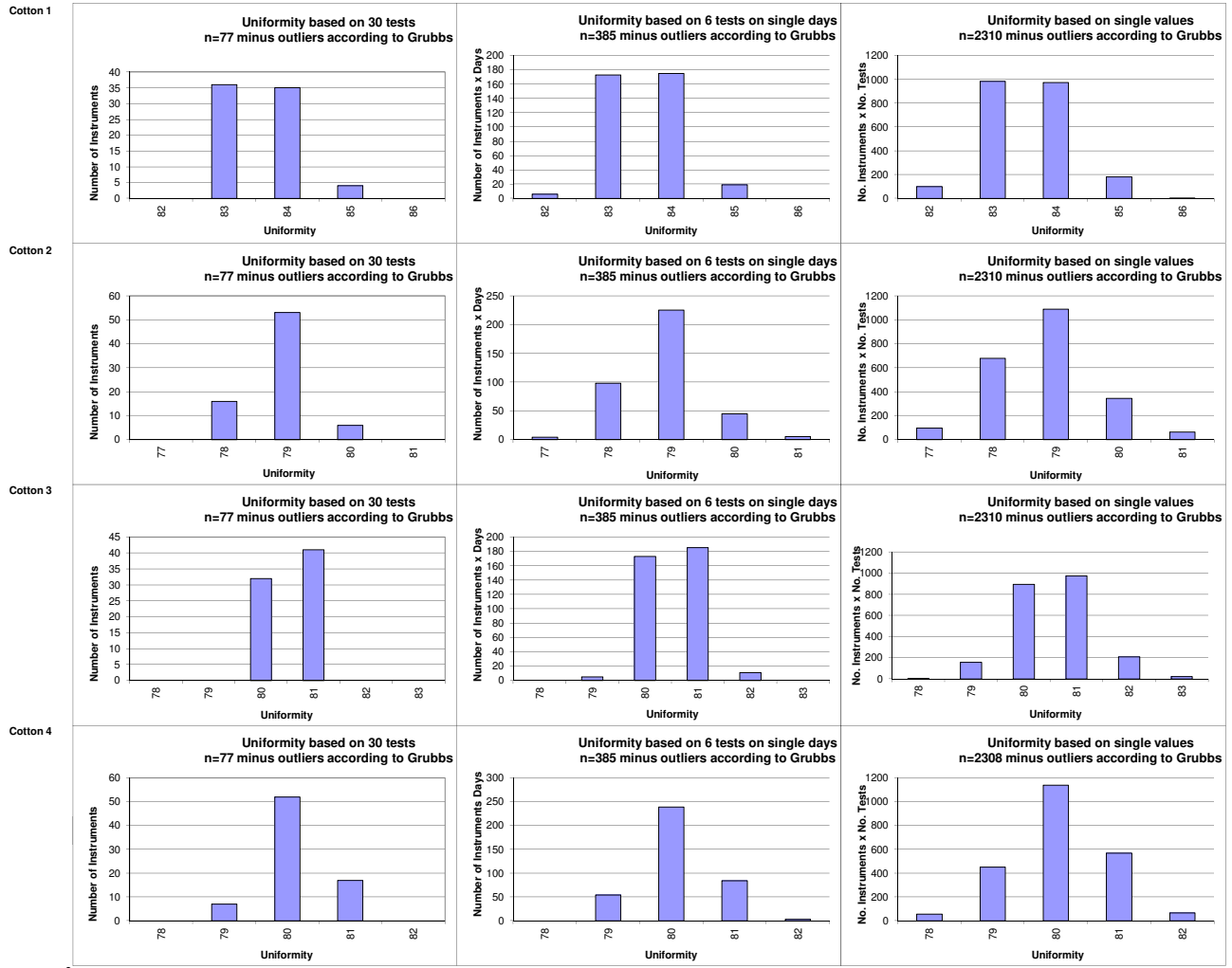
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



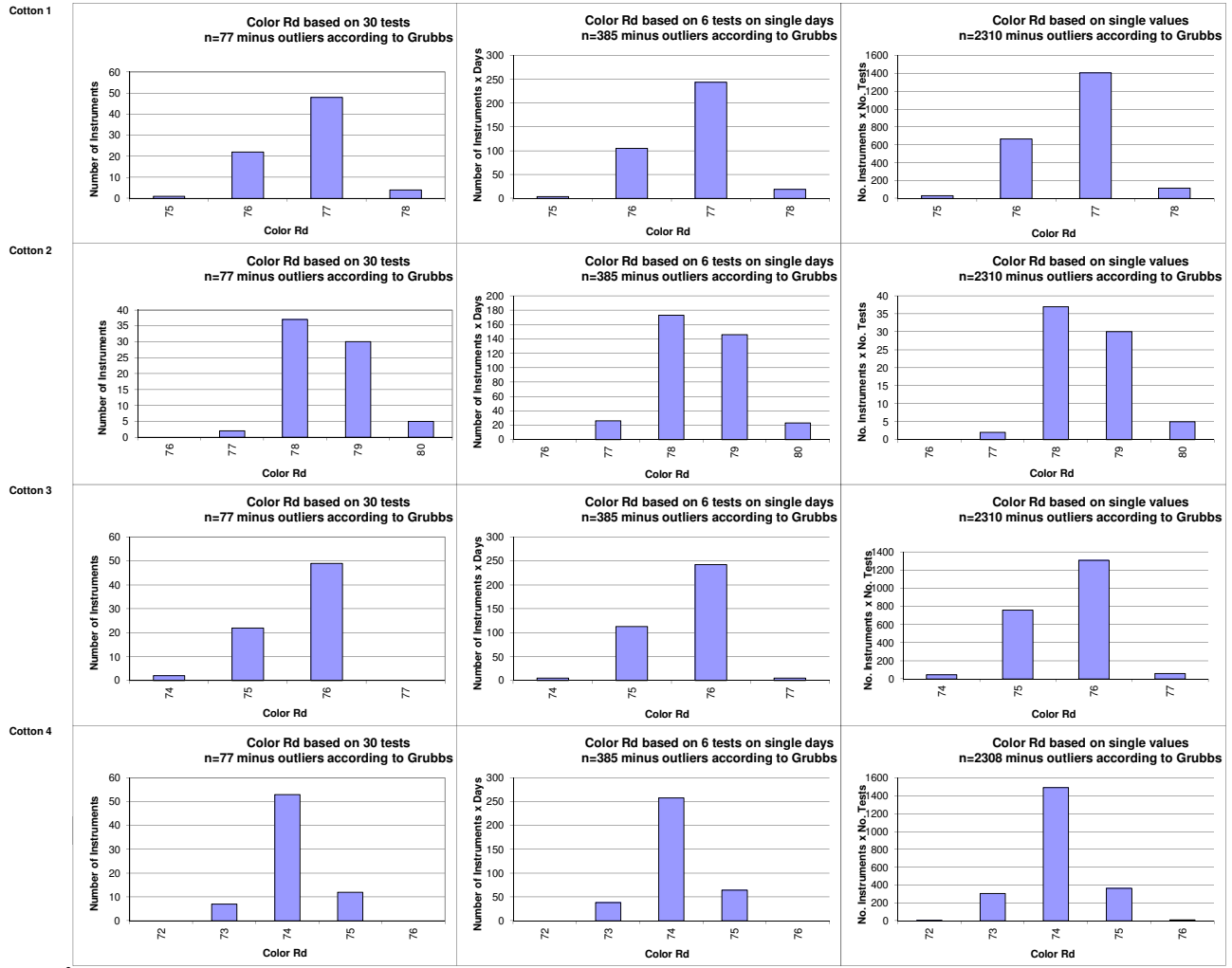
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(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



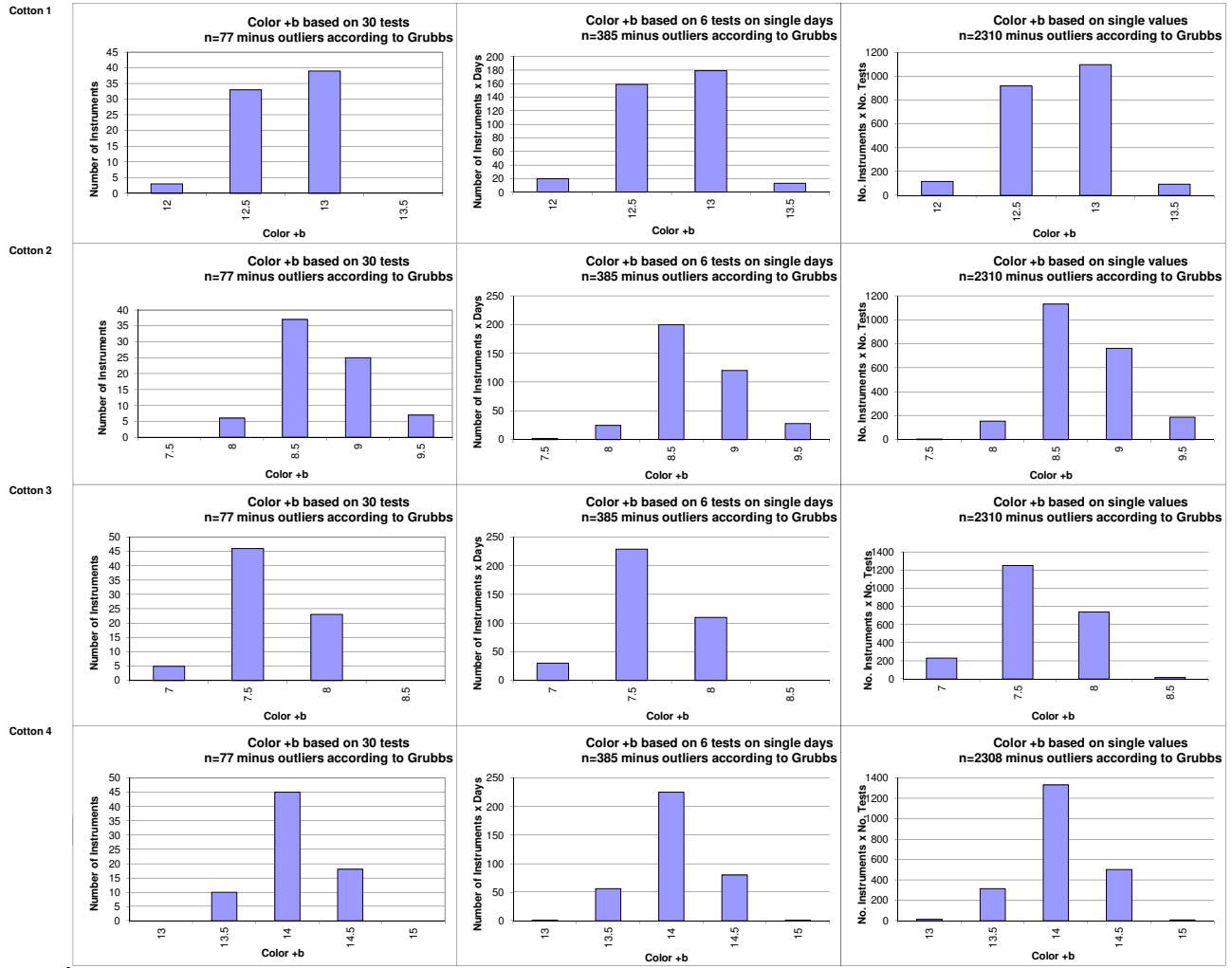
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



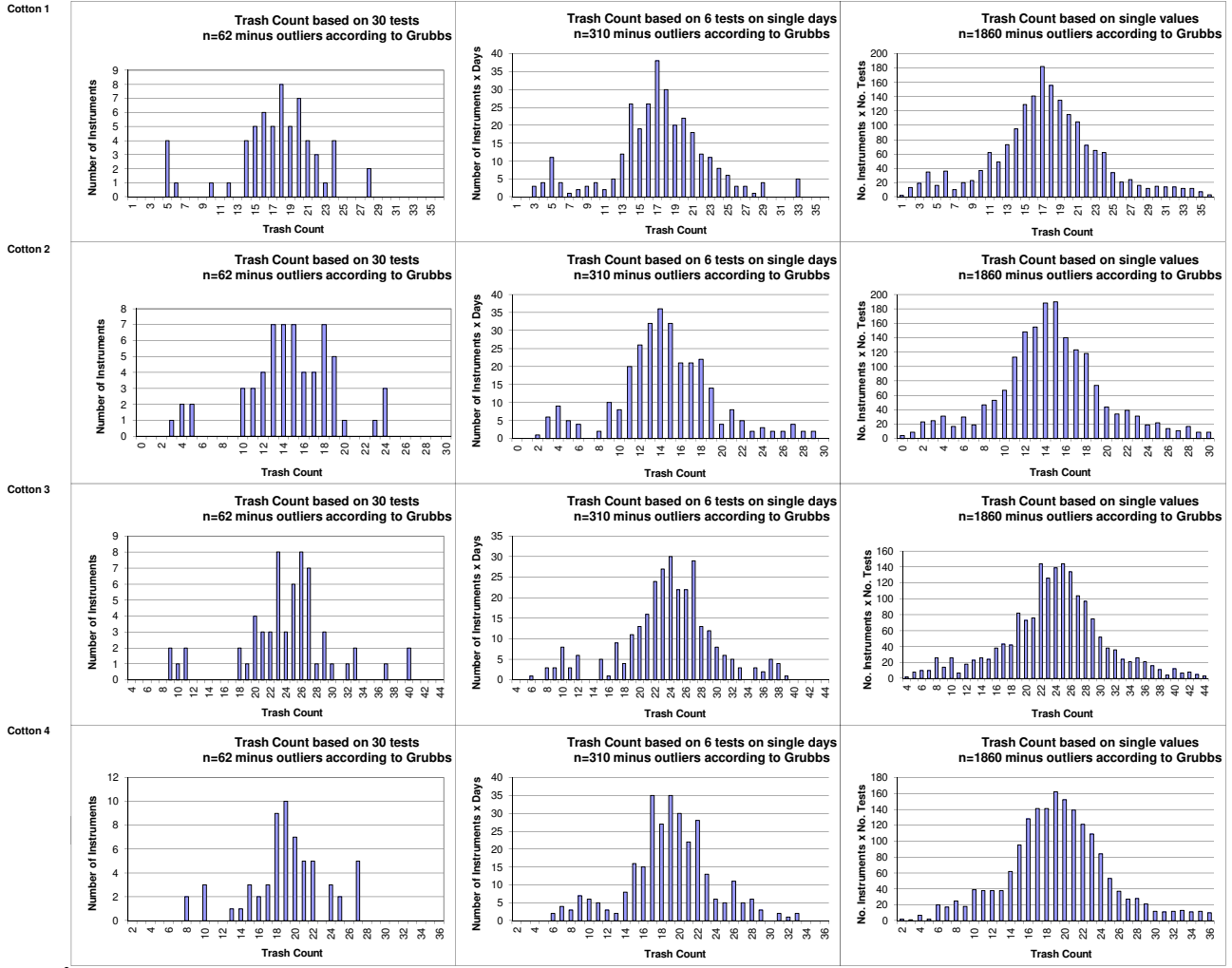
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



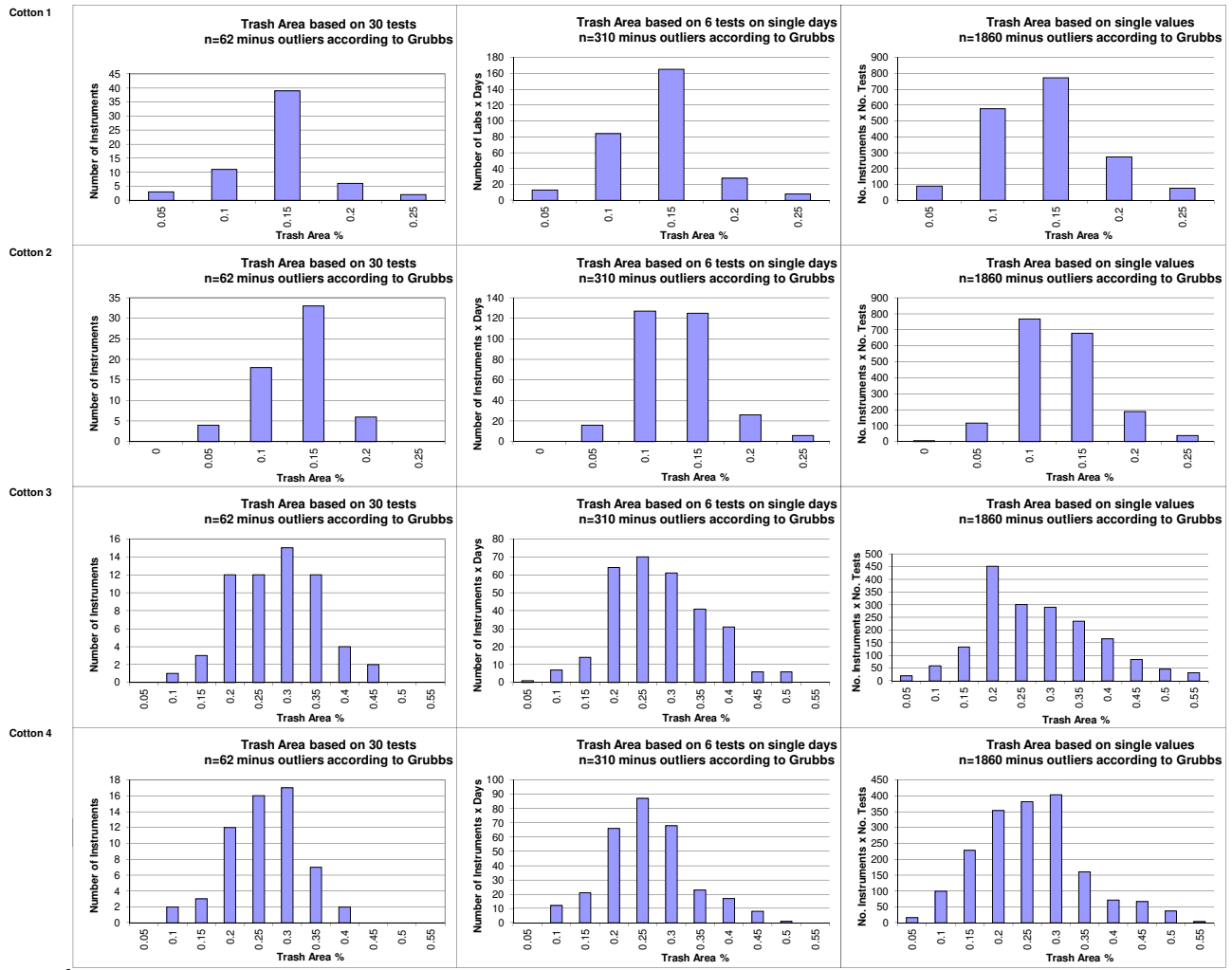
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



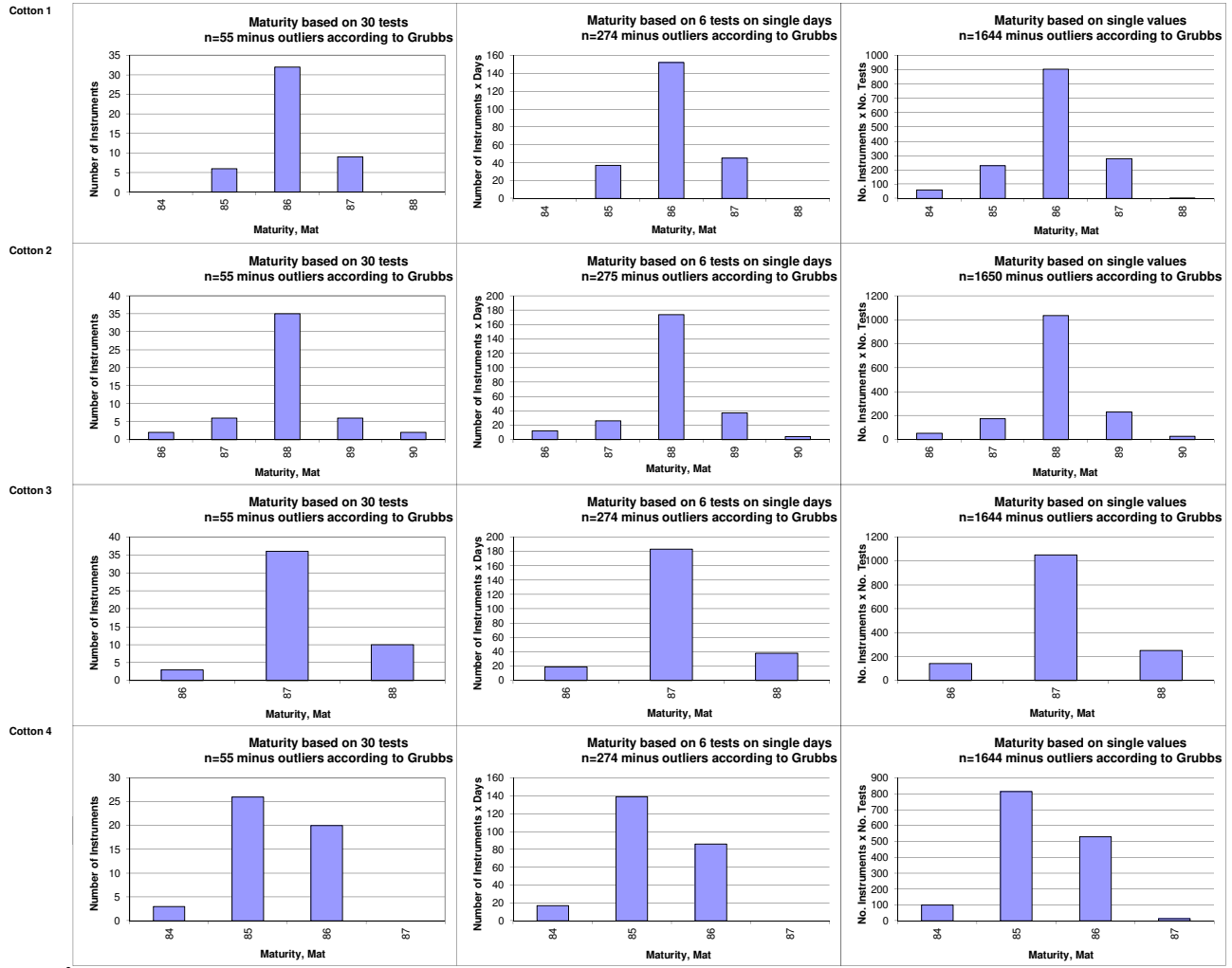
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



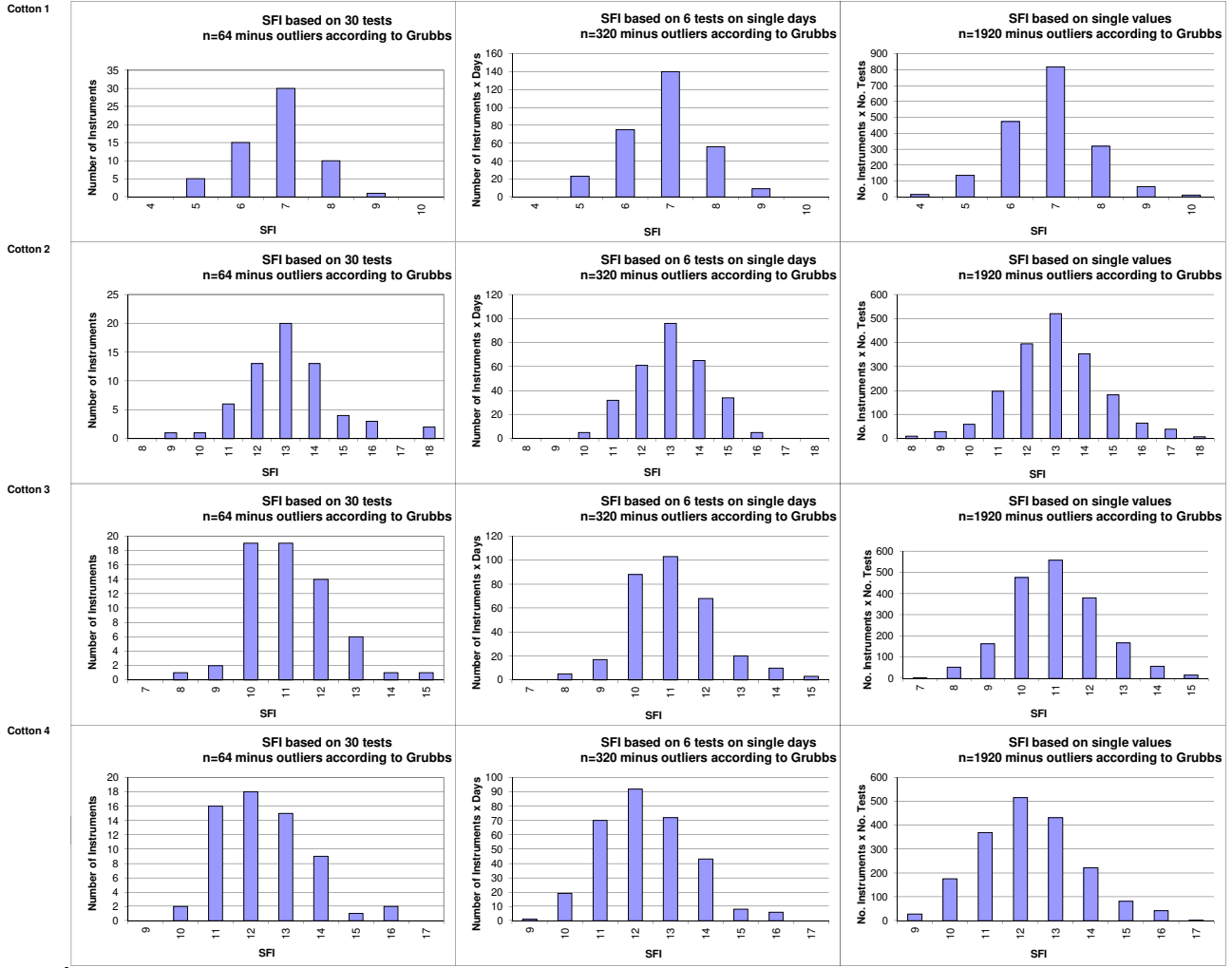
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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



CSITC Global - Round Trial 2021 - 1 General Evaluation

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

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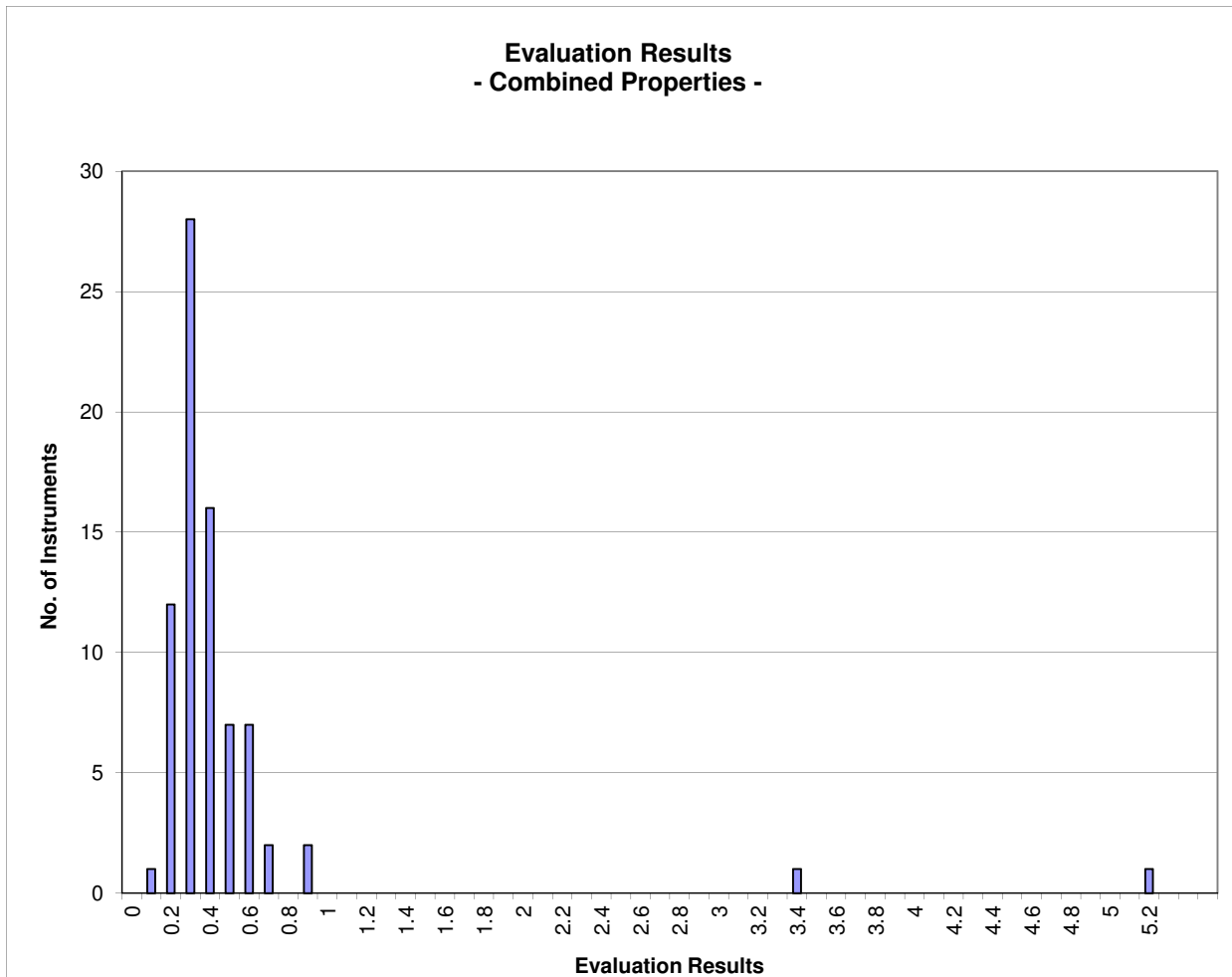
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2021 - 1

		Evaluation Combined Prop.
Statistics	Average	0.48
	Median	0.34
	Best Instrument	0.15
	Worst Instrument	5.17



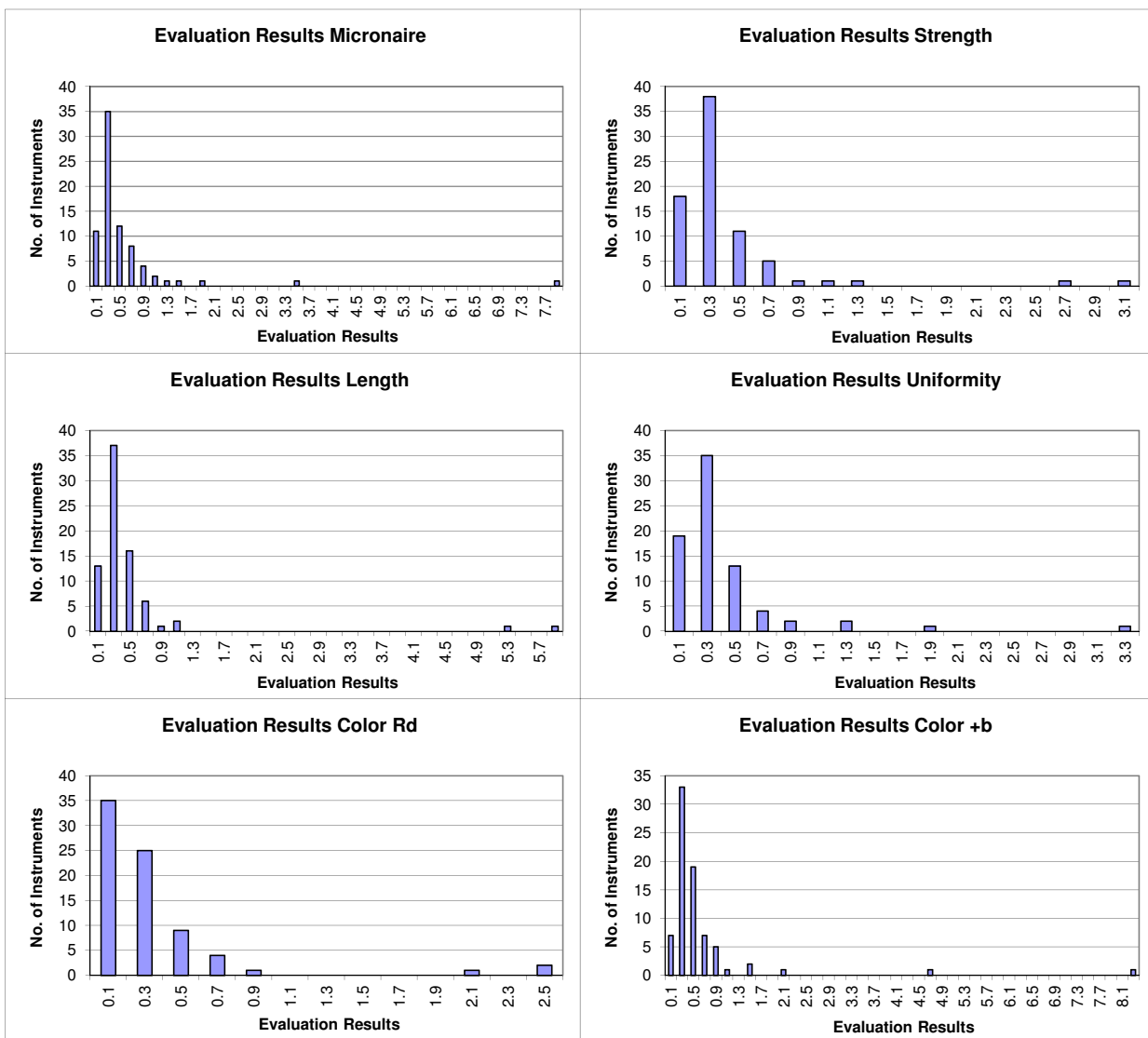
x-Axis shows midpoints of classes

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 2021 - 1

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.58	0.40	0.52	0.41	0.35	0.63
	Median	0.36	0.27	0.35	0.31	0.23	0.39
	Best Instr.	0.10	0.07	0.09	0.07	0.03	0.13
	Worst Instr.	7.87	3.14	6.00	3.24	2.45	8.39



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

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	97.1	97.1	97.1	98.7	95.1	89.6
Completely within limits	96.1	90.9	94.8	97.4	92.2	77.9
% of Instruments $\geq 75\%$ within limits	96.1	97.4	97.4	98.7	94.8	90.9
% of Instruments $\geq 50\%$ within limits	97.4	100.0	97.4	98.7	94.8	94.8

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	95.6	93.5	95.0	97.2	93.9	85.8
% of Instruments 100% within limits	63.6	28.6	31.2	58.4	68.8	26.0
% of Instruments $\geq 95\%$ within limits	89.6	70.1	83.1	93.5	81.8	48.1
% of Instruments $\geq 75\%$ within limits	96.1	93.5	96.1	96.1	93.5	84.4
% of Instruments $\geq 65\%$ within limits	96.1	96.1	97.4	98.7	94.8	88.3
% of Instruments $\geq 50\%$ within limits	96.1	97.4	97.4	98.7	94.8	92.2