



International Cotton Advisory Committee



CSITC Global - Round Trial 2019 - 2 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
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Global - Round Trial 2019 - 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)			3.570	4.224	4.230	4.506	
Reference Values for Evaluation			3.570	4.224	4.230	4.506	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.061	0.070	0.061	0.056	0.062
		CV %	1.7	1.6	1.4	1.2	1.5
	based on 6 tests	SD	0.064	0.076	0.066	0.061	0.067
		CV %	1.8	1.8	1.6	1.4	1.6
	based on single tests	SD	0.073	0.088	0.074	0.069	0.076
		CV %	2.0	2.1	1.8	1.5	1.9
Typical within-instrument Variation (Median)	between different days	SD	0.023	0.033	0.025	0.024	0.026
	with each 6 tests	CV %	0.6	0.8	0.6	0.5	0.6
	between single tests	SD	0.034	0.045	0.035	0.031	0.036
	on one day	CV %	1.0	1.1	0.8	0.7	0.9
	between all tests	SD	0.042	0.057	0.044	0.038	0.045
	on different days	CV %	1.2	1.3	1.0	0.8	1.1

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			26.104	32.107	22.714	24.281	
Reference Values for Evaluation			26.104	32.107	22.714	24.281	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.577	0.662	0.675	0.582	0.624
		CV %	2.2	2.1	3.0	2.4	2.4
	based on 6 tests	SD	0.698	0.792	0.736	0.661	0.721
		CV %	2.7	2.5	3.2	2.7	2.8
	based on single tests	SD	0.907	1.072	0.898	0.784	0.915
		CV %	3.5	3.3	4.0	3.2	3.5
Typical within-instrument Variation (Median)	between different days	SD	0.343	0.374	0.329	0.312	0.340
	with each 6 tests	CV %	1.3	1.2	1.4	1.3	1.3
	between single tests	SD	0.595	0.728	0.554	0.436	0.578
	on one day	CV %	2.3	2.3	2.4	1.8	2.2
	between all tests	SD	0.702	0.827	0.620	0.538	0.672
	on different days	CV %	2.7	2.6	2.7	2.2	2.6

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.0883	1.1981	0.9531	1.0187	
Reference Values for Evaluation			1.0883	1.1981	0.9531	1.0187	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.0083	0.0090	0.0114	0.0098	0.0096
		CV %	0.8	0.8	1.2	1.0	0.9
	based on 6 tests	SD	0.0103	0.0114	0.0131	0.0114	0.0116
		CV %	0.9	1.0	1.4	1.1	1.1
	based on single tests	SD	0.0149	0.0168	0.0164	0.0139	0.0155
		CV %	1.4	1.4	1.7	1.4	1.5
Typical within-instrument Variation (Median)	between different days	SD	0.0063	0.0062	0.0065	0.0046	0.0059
	with each 6 tests	CV %	0.6	0.5	0.7	0.4	0.6
	between single tests	SD	0.0109	0.0119	0.0111	0.0082	0.0105
	on one day	CV %	1.0	1.0	1.2	0.8	1.0
	between all tests	SD	0.0122	0.0135	0.0129	0.0095	0.0120
	on different days	CV %	1.1	1.1	1.4	0.9	1.1

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			79.526	83.829	76.728	80.419	
Reference Values for Evaluation			79.526	83.829	76.728	80.419	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.445	0.420	0.519	0.454	0.460
		CV %	0.6	0.5	0.7	0.6	0.6
	based on 6 tests	SD	0.533	0.490	0.635	0.552	0.552
		CV %	0.7	0.6	0.8	0.7	0.7
	based on single tests	SD	0.745	0.780	0.852	0.717	0.773
		CV %	0.9	0.9	1.1	0.9	1.0
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.265	0.291	0.321	0.269	0.287
		CV %	0.3	0.3	0.4	0.3	0.4
	between single tests on one day	SD	0.537	0.553	0.578	0.491	0.540
		CV %	0.7	0.7	0.8	0.6	0.7
	between all tests on different days	SD	0.596	0.616	0.674	0.558	0.611
		CV %	0.7	0.7	0.9	0.7	0.8

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			71.701	78.977	78.258	74.992	
Reference Values for Evaluation			71.701	78.977	78.258	74.992	
Number Of Instruments			115	115	115	115	115
Inter-Instrument Variation	based on 30 tests	SD	0.600	0.531	0.491	0.640	0.566
		CV %	0.8	0.7	0.6	0.9	0.7
	based on 6 tests	SD	0.608	0.561	0.520	0.671	0.590
		CV %	0.8	0.7	0.7	0.9	0.8
	based on single tests	SD	0.628	0.593	0.542	0.674	0.609
		CV %	0.9	0.8	0.7	0.9	0.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.161	0.195	0.175	0.157	0.172
		CV %	0.2	0.2	0.2	0.2	0.2
	between single tests on one day	SD	0.159	0.166	0.134	0.132	0.148
		CV %	0.2	0.2	0.2	0.2	0.2
	between all tests on different days	SD	0.256	0.282	0.217	0.225	0.245
		CV %	0.4	0.4	0.3	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			16.443	11.085	9.448	13.712	
Reference Values for Evaluation			16.443	11.085	9.448	13.712	
Number Of Instruments			115	115	115	115	115
Inter-Instrument Variation	based on 30 tests	SD	0.553	0.268	0.226	0.320	0.342
		CV %	3.4	2.4	2.4	2.3	2.6
	based on 6 tests	SD	0.547	0.304	0.224	0.322	0.349
		CV %	3.3	2.7	2.4	2.4	2.7
	based on single tests	SD	0.561	0.311	0.254	0.343	0.367
		CV %	3.4	2.8	2.7	2.5	2.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.098	0.114	0.079	0.086	0.094
		CV %	0.6	1.0	0.8	0.6	0.8
	between single tests on one day	SD	0.111	0.102	0.070	0.087	0.093
		CV %	0.7	0.9	0.7	0.6	0.7
	between all tests on different days	SD	0.157	0.167	0.118	0.143	0.146
		CV %	1.0	1.5	1.2	1.0	1.2

Optional Parameters

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

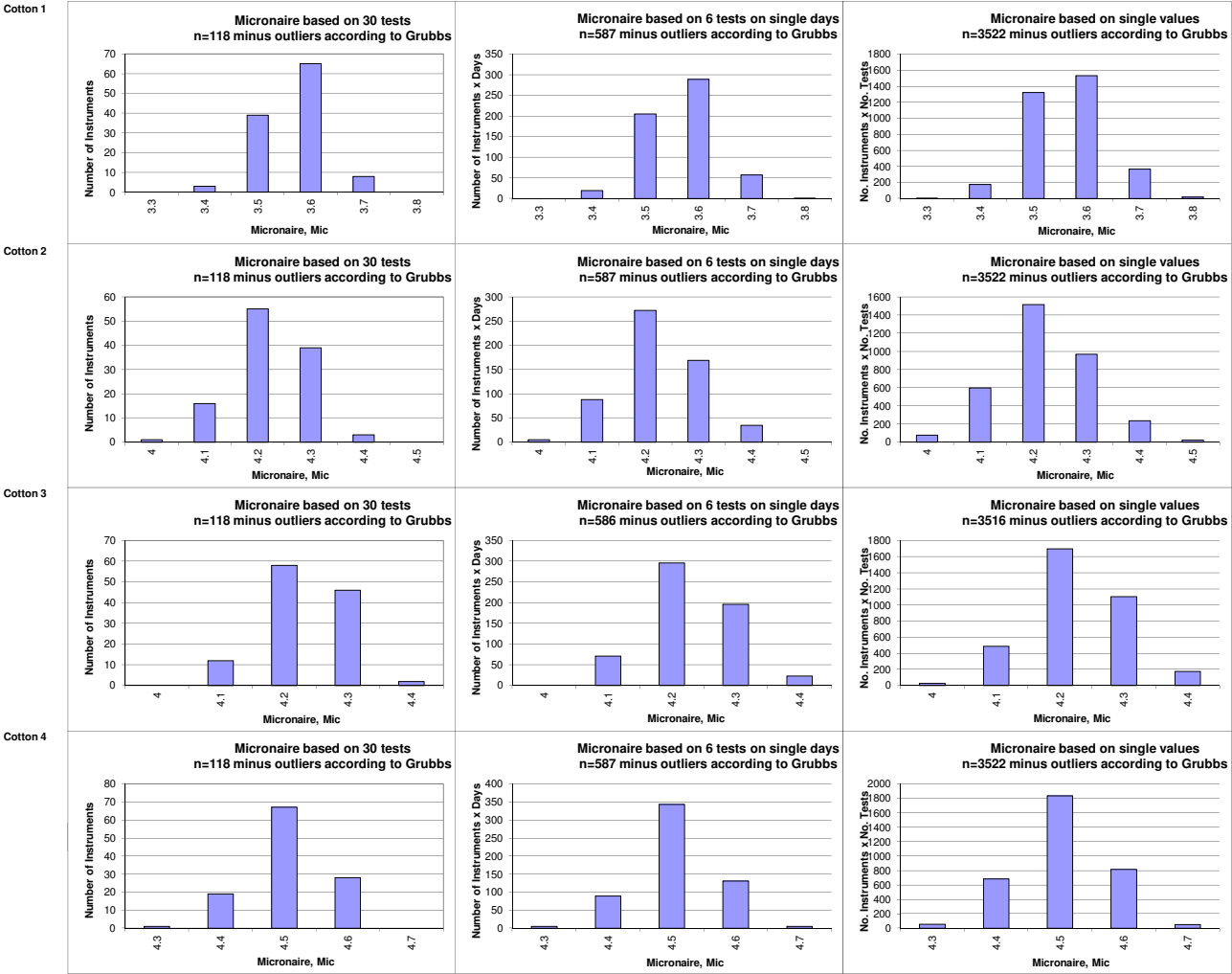
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			11.35	26.84	28.92	11.76	
Reference Values for Evaluation			11.35	26.84	28.92	11.76	
Number Of Instruments			95	95	95	95	95
Inter-Instrument Variation	based on 30 tests	SD	2.82	6.79	7.12	3.03	4.94
		CV %	24.8	25.3	24.6	25.7	25.1
	based on 6 tests	SD	3.84	7.66	7.61	3.97	5.77
		CV %	33.8	28.5	26.3	33.8	30.6
	based on single tests	SD	4.51	9.22	8.31	4.51	6.64
		CV %	39.7	34.4	28.7	38.4	35.3
Typical within-instrument Variation (Median)	between different days	SD	1.49	2.79	2.75	1.52	2.14
	with each 6 tests	CV %	13.1	10.4	9.5	12.9	11.5
	between single tests	SD	1.92	3.12	2.97	2.02	2.51
	on one day	CV %	16.9	11.6	10.3	17.1	14.0
	between all tests	SD	2.58	4.44	4.29	2.69	3.50
	on different days	CV %	22.7	16.5	14.8	22.9	19.2

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.119	0.255	0.219	0.126	
Reference Values for Evaluation			0.119	0.255	0.219	0.126	
Number Of Instruments			95	95	95	95	95
Inter-Instrument Variation	based on 30 tests	SD	0.027	0.068	0.050	0.033	0.044
		CV %	22.7	26.7	22.7	26.1	24.6
	based on 6 tests	SD	0.041	0.083	0.056	0.046	0.056
		CV %	34.3	32.4	25.7	36.3	32.2
	based on single tests	SD	0.046	0.094	0.073	0.055	0.067
		CV %	39.0	36.8	33.2	43.8	38.2
Typical within-instrument Variation (Median)	between different days	SD	0.019	0.035	0.021	0.022	0.024
	with each 6 tests	CV %	16.1	13.6	9.6	17.2	14.1
	between single tests	SD	0.023	0.038	0.028	0.025	0.028
	on one day	CV %	19.1	14.7	12.7	19.5	16.5
	between all tests	SD	0.035	0.056	0.043	0.038	0.043
	on different days	CV %	29.3	21.8	19.7	30.3	25.3

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			84.09	85.65	85.76	86.58	
Reference Values for Evaluation			84.09	85.65	85.76	86.58	
Number Of Instruments			92	92	92	92	92
Inter-Instrument Variation	based on 30 tests	SD	0.78	0.79	0.75	0.74	0.77
		CV %	0.9	0.9	0.9	0.8	0.9
	based on 6 tests	SD	0.80	0.83	0.76	0.75	0.79
		CV %	0.9	1.0	0.9	0.9	0.9
	based on single tests	SD	0.83	0.90	0.78	0.85	0.84
		CV %	1.0	1.0	0.9	1.0	1.0
Typical within-instrument Variation (Median)	between different days	SD	0.14	0.14	0.10	0.09	0.12
	with each 6 tests	CV %	0.2	0.2	0.1	0.1	0.1
	between single tests	SD	0.16	0.17	0.16	0.13	0.16
	on one day	CV %	0.2	0.2	0.2	0.2	0.2
	between all tests	SD	0.35	0.31	0.25	0.25	0.29
	on different days	CV %	0.4	0.4	0.3	0.3	0.3

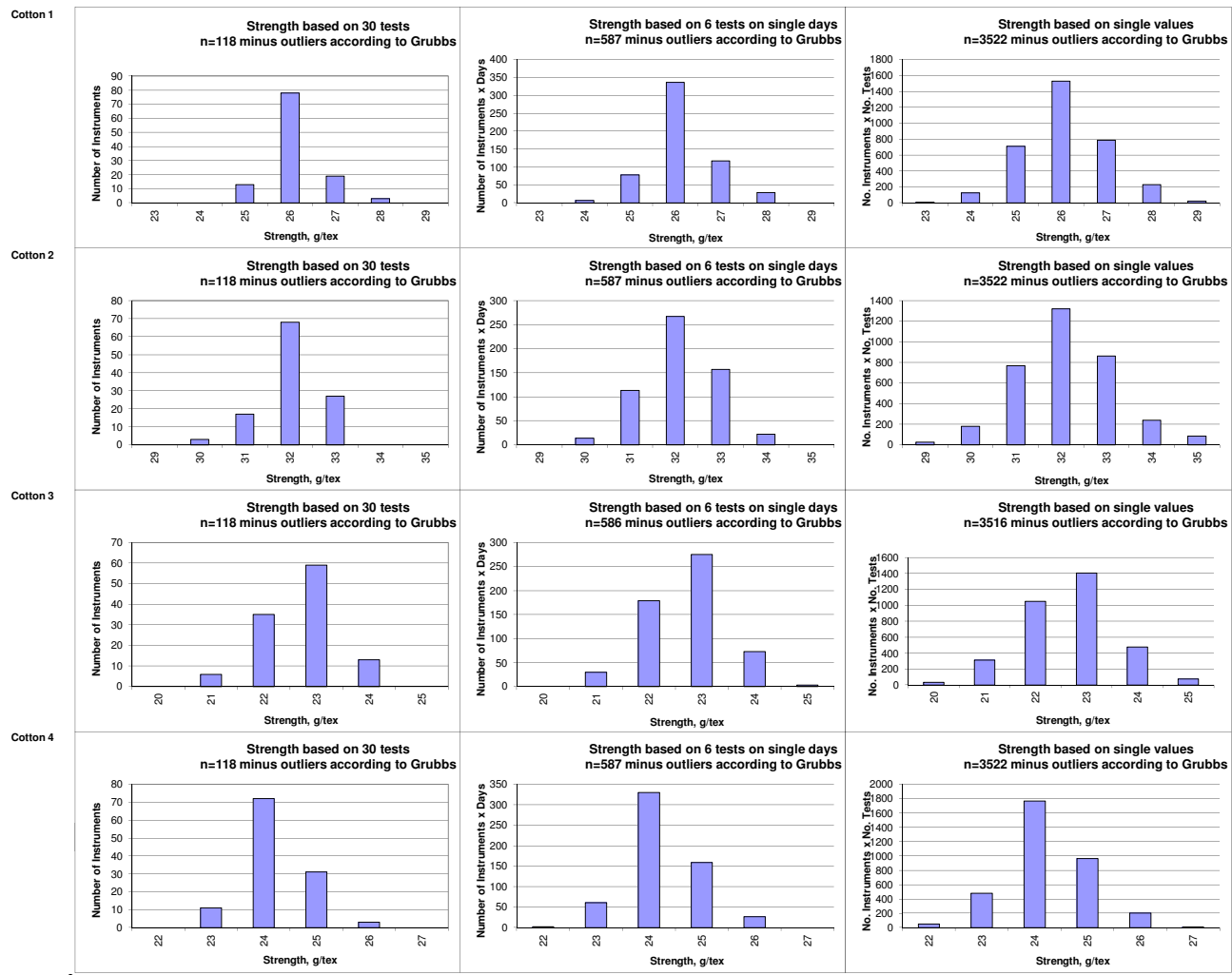
SFI						
			Cotton 1	Cotton 2	Cotton 3	Cotton 4
Average of Instruments (Grubbs)			11.95	7.28	17.80	11.71
Reference Values for Evaluation			11.95	7.28	17.80	11.71
Number Of Instruments			97	97	97	97
Inter-Instrument Variation	based on 30 tests	SD	1.18	0.70	2.58	1.17
		CV %	9.9	9.6	14.5	10.0
	based on 6 tests	SD	1.18	0.69	2.67	1.19
		CV %	9.9	9.4	15.0	10.2
	based on single tests	SD	1.51	0.81	2.83	1.33
		CV %	12.7	11.1	15.9	11.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.29	0.20	0.50	0.37
		CV %	2.4	2.8	2.8	3.2
	between single tests on one day	SD	0.60	0.39	0.90	0.60
		CV %	5.0	5.3	5.1	5.1
	between all tests on different days	SD	0.66	0.42	1.01	0.67
		CV %	5.5	5.8	5.7	5.7

Test Result Distributions
Micronaire



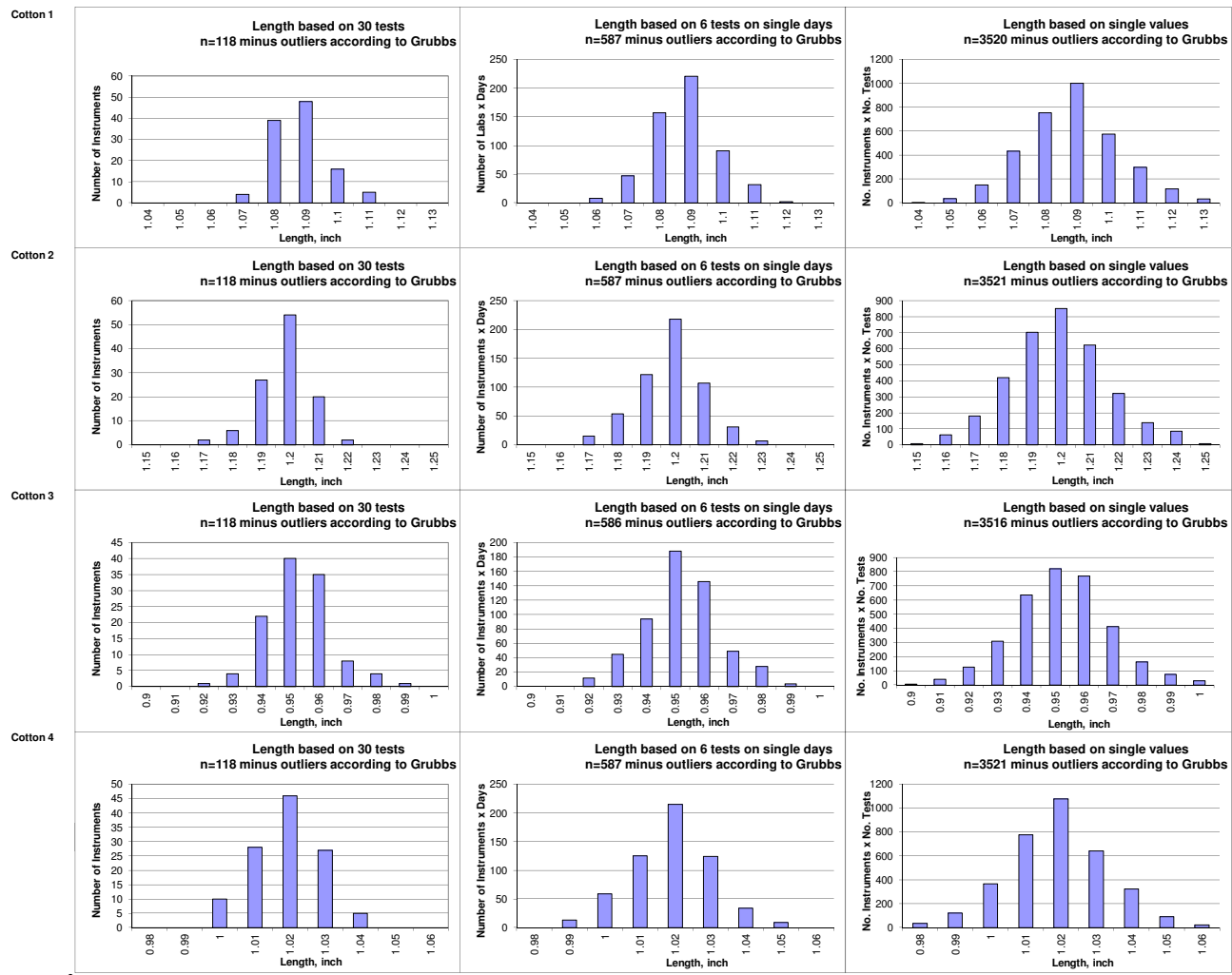
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



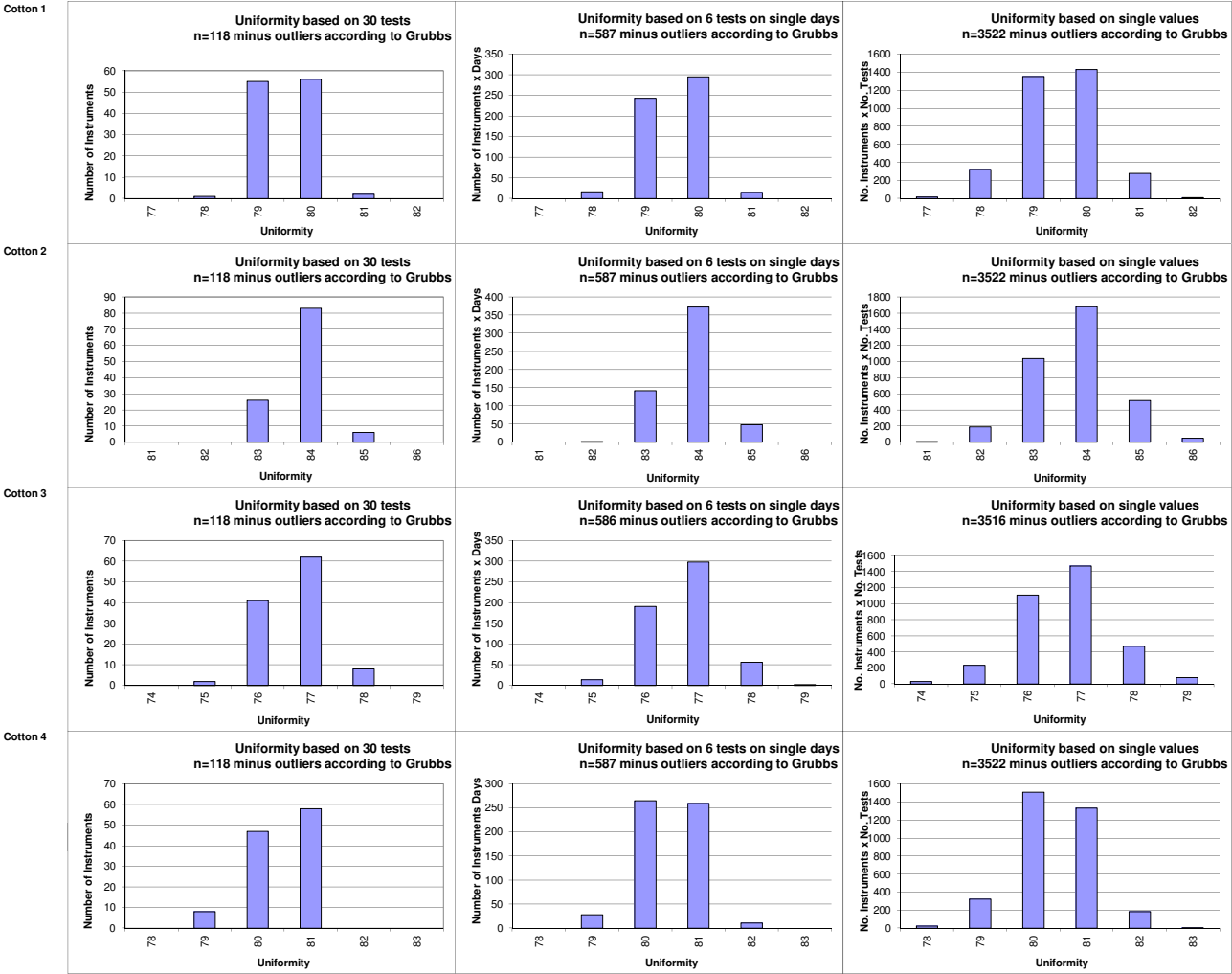
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



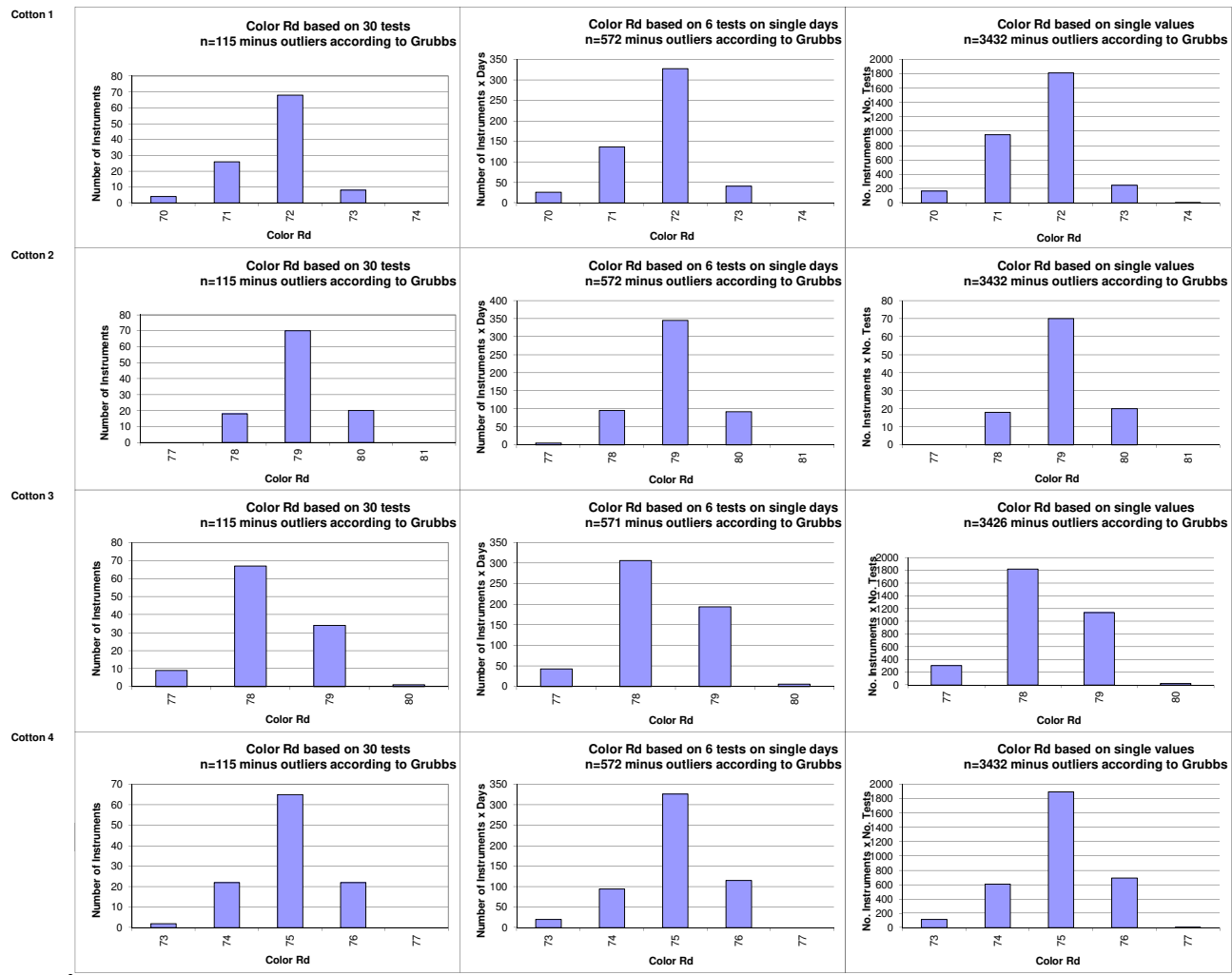
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



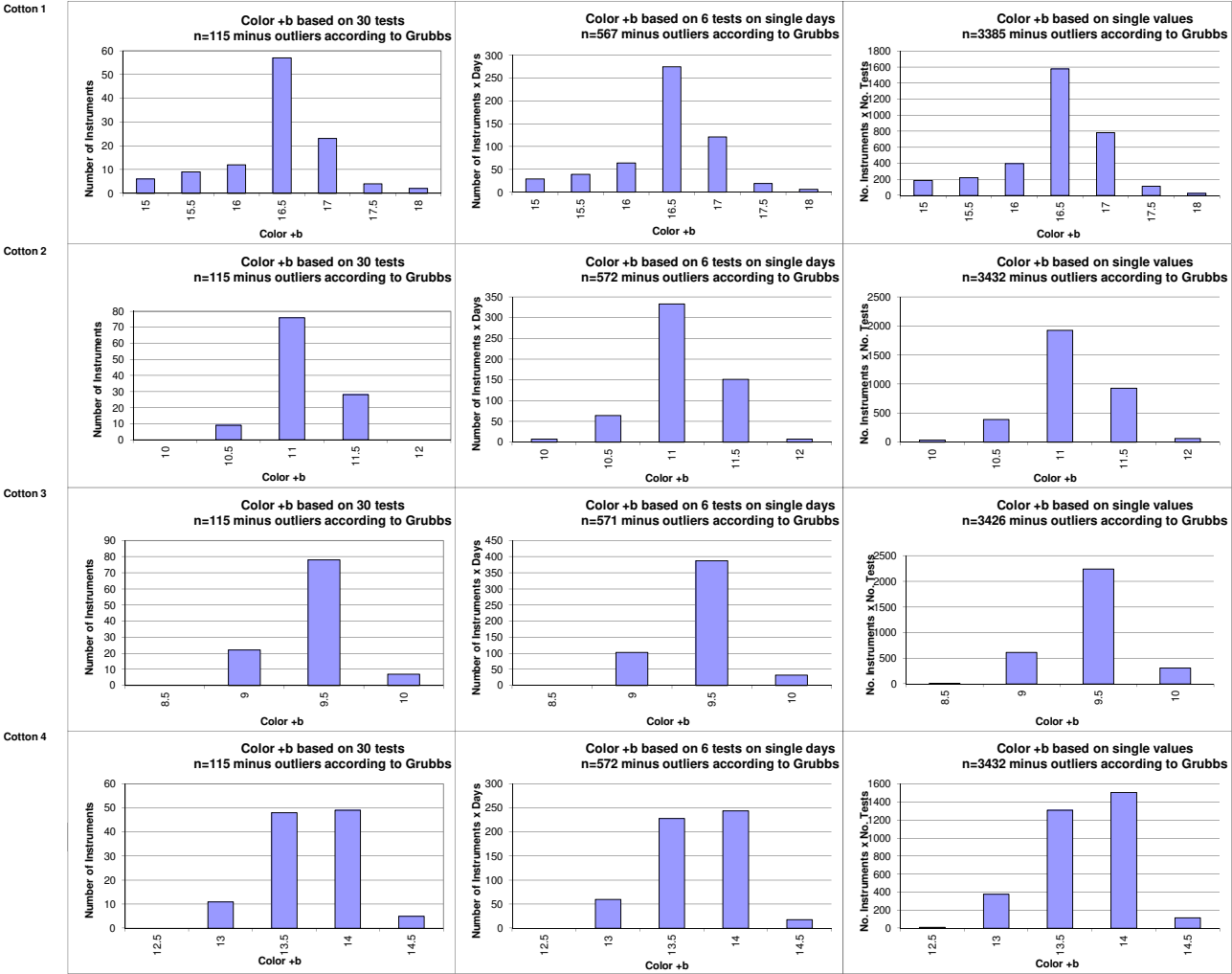
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



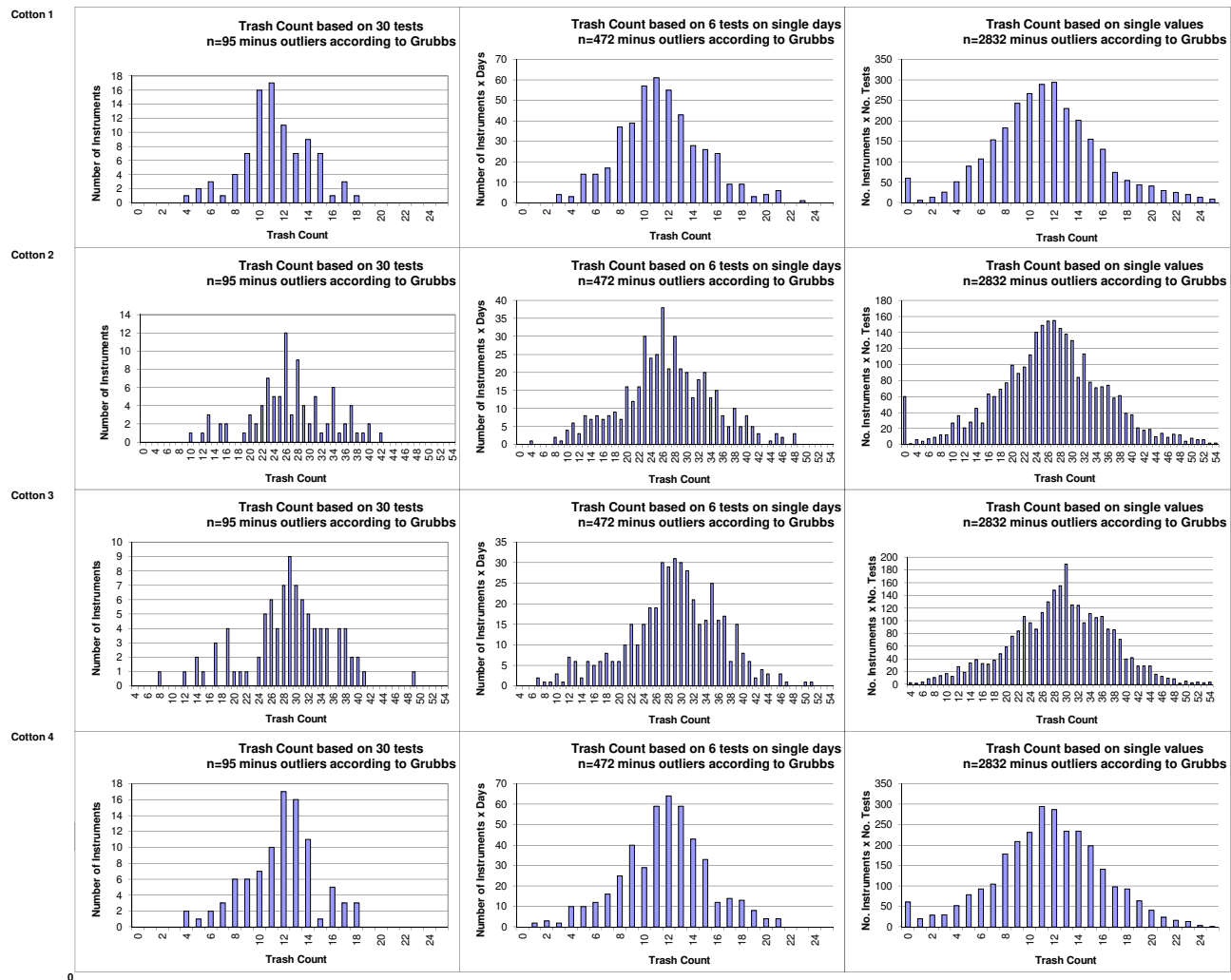
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



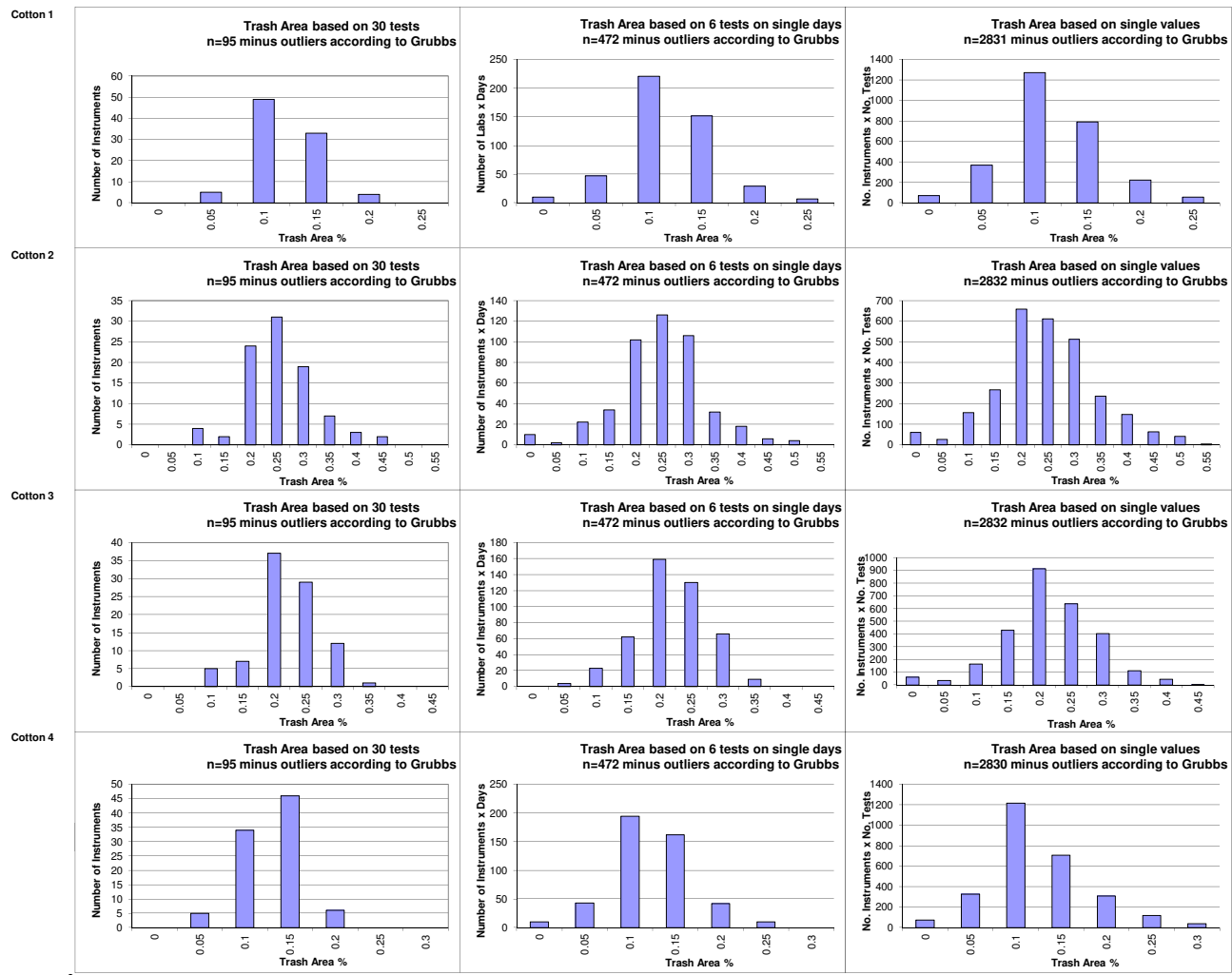
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



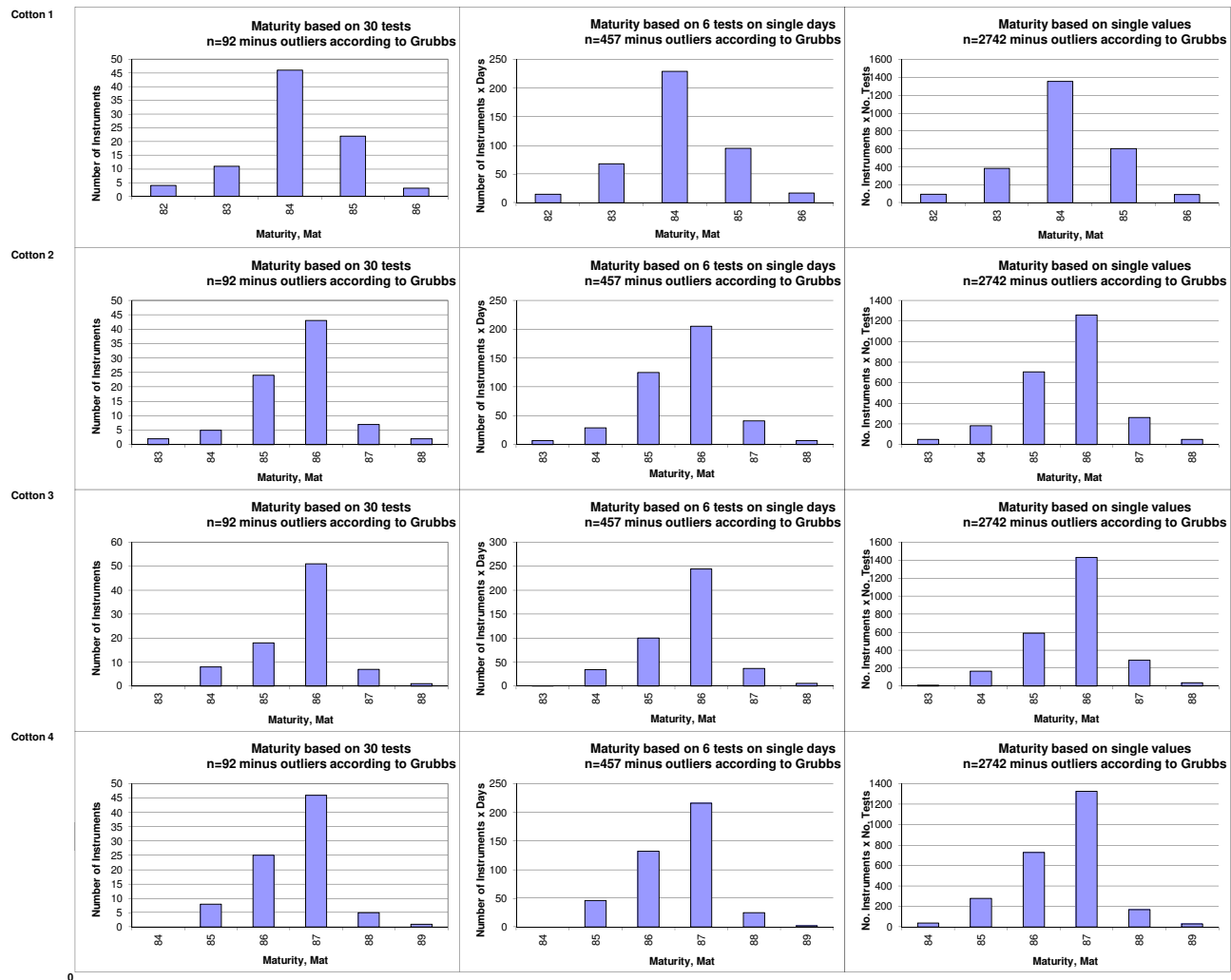
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



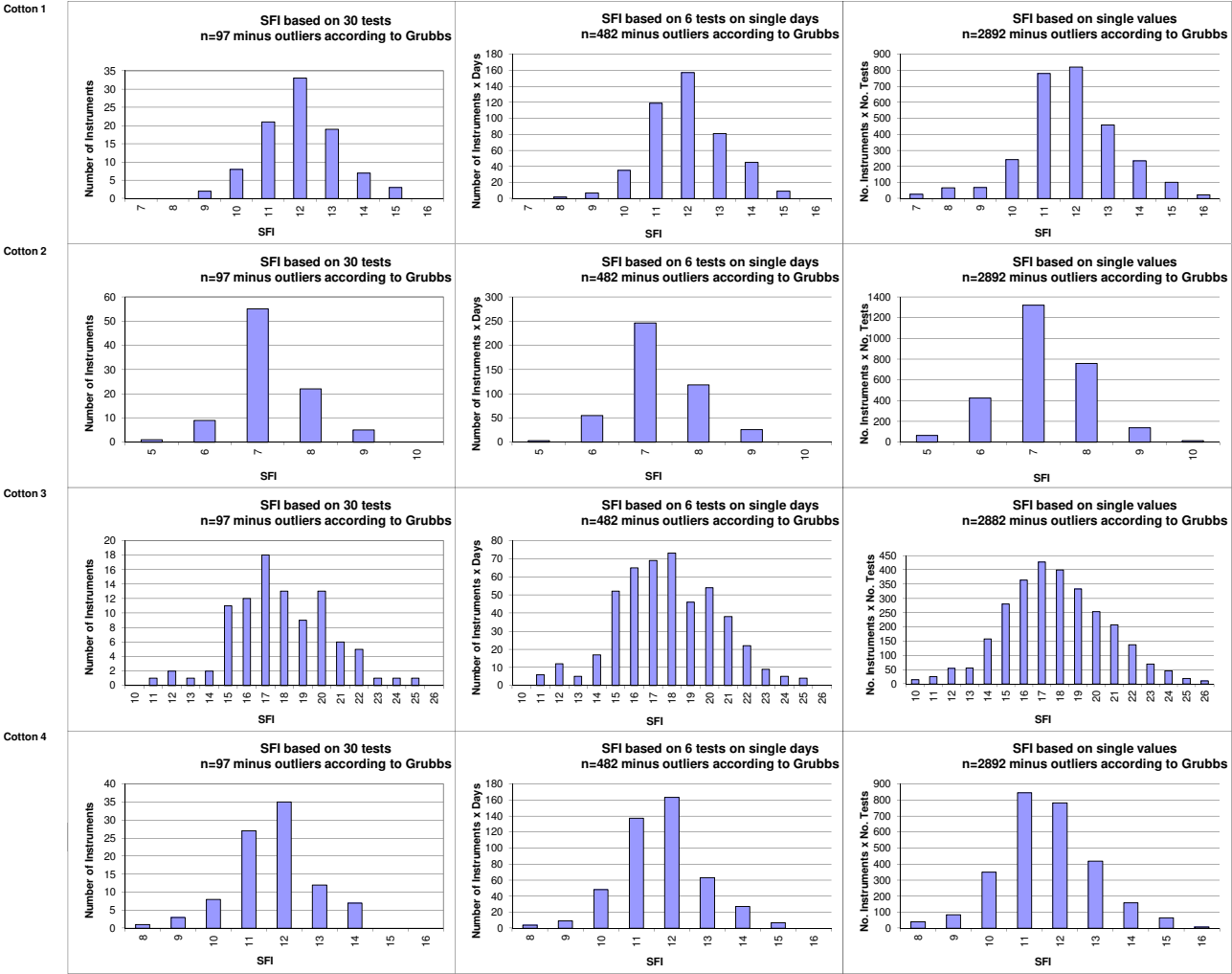
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2019 - 2 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

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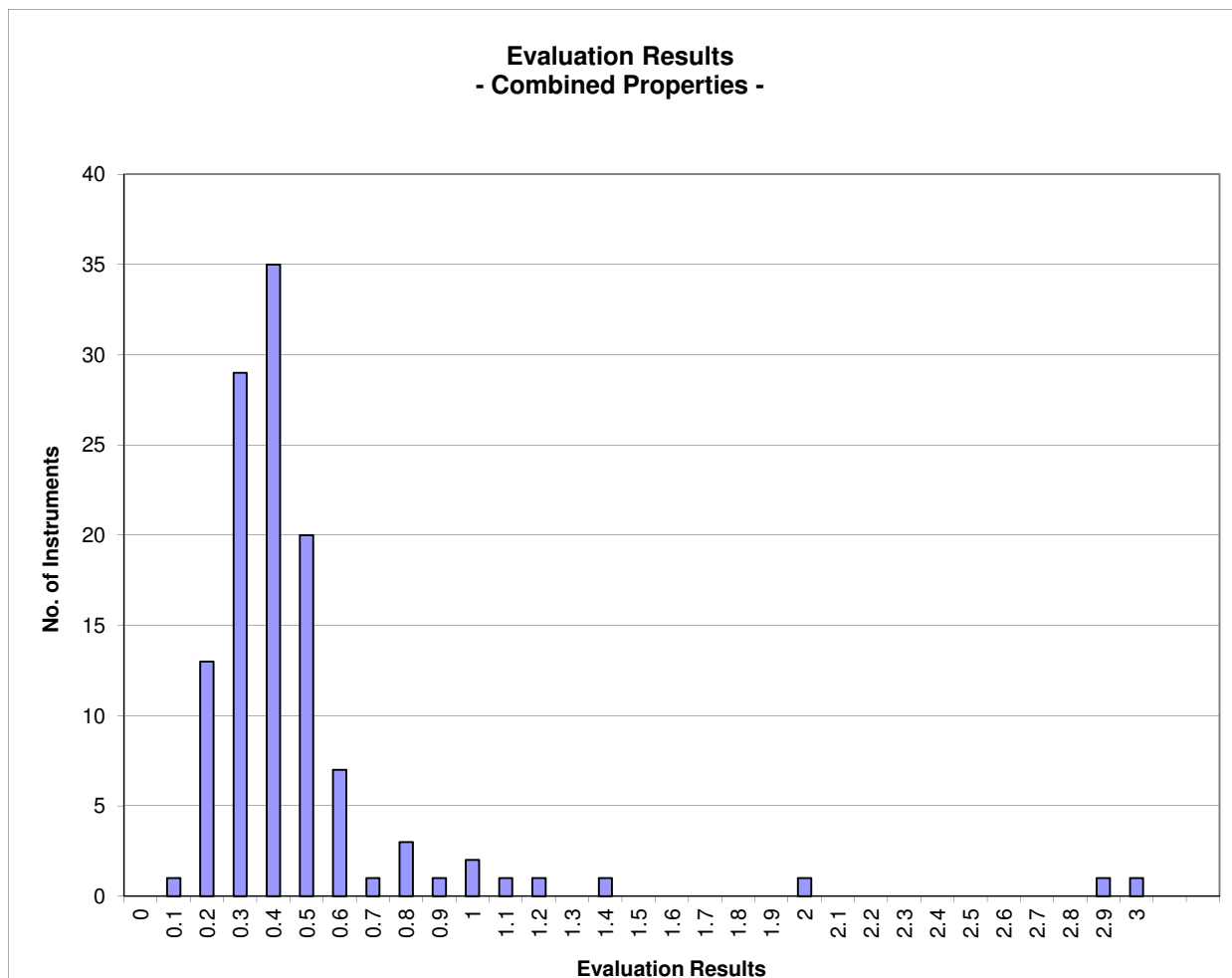
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2019 - 2

		Evaluation Combined Prop.
Statistics	Average	0.48
	Median	0.38
	Best Instrument	0.13
	Worst Instrument	3.02



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)

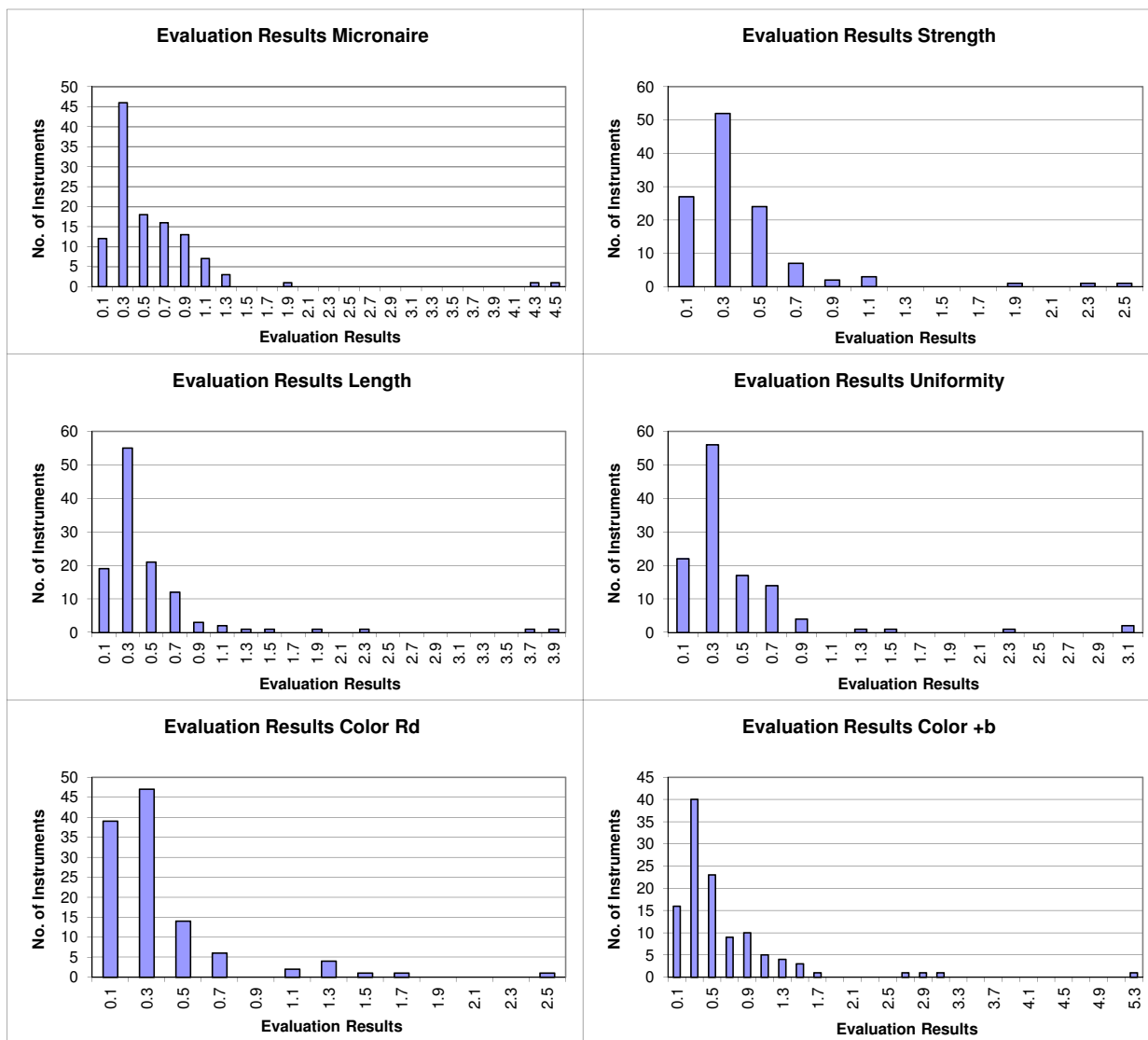
Instrument Evaluation

- Graph of Single Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2019 - 2

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.58	0.39	0.48	0.44	0.37	0.62
	Median	0.42	0.32	0.35	0.31	0.28	0.40
	Best Instr.	0.12	0.05	0.08	0.06	0.07	0.09
	Worst Instr.	4.49	2.51	3.90	3.15	2.43	5.27



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	98.1	97.2	95.8	97.7	93.9	86.1
Completely within limits	96.6	94.1	91.5	96.6	89.6	71.3
% of Instruments $\geq 75\%$ within limits	97.5	96.6	95.8	96.6	92.2	82.6
% of Instruments $\geq 50\%$ within limits	98.3	99.2	96.6	97.5	94.8	93.0

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	96.7	93.7	93.7	95.4	92.9	81.2
% of Instruments 100% within limits	57.6	27.1	23.7	37.3	67.8	23.5
% of Instruments $\geq 95\%$ within limits	87.3	68.6	74.6	85.6	79.1	40.9
% of Instruments $\geq 75\%$ within limits	96.6	94.9	93.2	95.8	91.3	73.0
% of Instruments $\geq 65\%$ within limits	98.3	97.5	96.6	95.8	92.2	77.4
% of Instruments $\geq 50\%$ within limits	98.3	99.2	96.6	97.5	94.8	87.0