



International Cotton Advisory Committee



CSITC Global - Round Trial 2020 - 4 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 2020 - 4

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

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			4.154	3.301	4.123	4.984	
Reference Values for Evaluation			4.154	3.301	4.123	4.984	
Number Of Instruments			119	119	119	119	119
Inter-Instrument Variation	based on 30 tests	SD	0.054	0.045	0.059	0.046	0.051
		CV %	1.3	1.3	1.4	0.9	1.3
	based on 6 tests	SD	0.059	0.051	0.065	0.050	0.056
		CV %	1.4	1.5	1.6	1.0	1.4
	based on single tests	SD	0.067	0.056	0.072	0.060	0.064
		CV %	1.6	1.7	1.7	1.2	1.6
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.023	0.021	0.027	0.023	0.024
		CV %	0.6	0.6	0.7	0.5	0.6
	between single tests on one day	SD	0.034	0.024	0.033	0.030	0.030
		CV %	0.8	0.7	0.8	0.6	0.7
	between all tests on different days	SD	0.041	0.033	0.045	0.037	0.039
		CV %	1.0	1.0	1.1	0.7	1.0

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			22.810	29.372	31.154	26.388	
Reference Values for Evaluation			22.810	29.372	31.154	26.388	
Number Of Instruments			119	119	119	119	119
Inter-Instrument Variation	based on 30 tests	SD	0.598	0.594	0.603	0.501	0.574
		CV %	2.6	2.0	1.9	1.9	2.1
	based on 6 tests	SD	0.725	0.768	0.693	0.623	0.702
		CV %	3.2	2.6	2.2	2.4	2.6
	based on single tests	SD	0.871	0.929	0.898	0.805	0.876
		CV %	3.8	3.2	2.9	3.1	3.2
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.320	0.401	0.403	0.299	0.356
		CV %	1.4	1.4	1.3	1.1	1.3
	between single tests on one day	SD	0.502	0.513	0.624	0.480	0.530
		CV %	2.2	1.7	2.0	1.8	1.9
	between all tests on different days	SD	0.605	0.657	0.739	0.567	0.642
		CV %	2.7	2.2	2.4	2.2	2.4

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.9502	1.1112	1.1937	1.0426	
Reference Values for Evaluation			0.9502	1.1112	1.1937	1.0426	
Number Of Instruments			119	119	119	119	119
Inter-Instrument Variation	based on 30 tests	SD	0.0101	0.0096	0.0082	0.0077	0.0089
		CV %	1.1	0.9	0.7	0.7	0.8
	based on 6 tests	SD	0.0132	0.0113	0.0108	0.0096	0.0112
		CV %	1.4	1.0	0.9	0.9	1.1
	based on single tests	SD	0.0160	0.0140	0.0148	0.0131	0.0145
		CV %	1.7	1.3	1.2	1.3	1.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0061	0.0055	0.0061	0.0056	0.0058
		CV %	0.6	0.5	0.5	0.5	0.5
	between single tests on one day	SD	0.0101	0.0090	0.0107	0.0096	0.0099
		CV %	1.1	0.8	0.9	0.9	0.9
	between all tests on different days	SD	0.0122	0.0105	0.0123	0.0110	0.0115
		CV %	1.3	0.9	1.0	1.1	1.1

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			76.580	81.067	83.439	78.921	
Reference Values for Evaluation			76.580	81.067	83.439	78.921	
Number Of Instruments			119	119	119	119	119
Inter-Instrument Variation	based on 30 tests	SD	0.457	0.450	0.363	0.407	0.419
		CV %	0.6	0.6	0.4	0.5	0.5
	based on 6 tests	SD	0.607	0.503	0.509	0.501	0.530
		CV %	0.8	0.6	0.6	0.6	0.7
	based on single tests	SD	0.811	0.689	0.716	0.709	0.731
		CV %	1.1	0.9	0.9	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.304	0.262	0.275	0.276	0.279
		CV %	0.4	0.3	0.3	0.3	0.3
	between single tests on one day	SD	0.537	0.459	0.502	0.470	0.492
		CV %	0.7	0.6	0.6	0.6	0.6
	between all tests on different days	SD	0.642	0.527	0.565	0.554	0.572
		CV %	0.8	0.7	0.7	0.7	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			77.501	69.875	77.657	78.454	
Reference Values for Evaluation			77.501	69.875	77.657	78.454	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.640	0.474	0.523	0.561	0.550
		CV %	0.8	0.7	0.7	0.7	0.7
	based on 6 tests	SD	0.648	0.552	0.542	0.618	0.590
		CV %	0.8	0.8	0.7	0.8	0.8
	based on single tests	SD	0.644	0.548	0.572	0.641	0.601
		CV %	0.8	0.8	0.7	0.8	0.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.170	0.188	0.177	0.177	0.178
		CV %	0.2	0.3	0.2	0.2	0.2
	between single tests on one day	SD	0.133	0.130	0.134	0.108	0.126
		CV %	0.2	0.2	0.2	0.1	0.2
	between all tests on different days	SD	0.225	0.238	0.243	0.230	0.234
		CV %	0.3	0.3	0.3	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			9.664	14.935	9.981	8.744	
Reference Values for Evaluation			9.664	14.935	9.981	8.744	
Number Of Instruments			118	118	118	118	118
Inter-Instrument Variation	based on 30 tests	SD	0.254	0.315	0.243	0.285	0.274
		CV %	2.6	2.1	2.4	3.3	2.6
	based on 6 tests	SD	0.241	0.333	0.241	0.301	0.279
		CV %	2.5	2.2	2.4	3.4	2.6
	based on single tests	SD	0.247	0.346	0.272	0.317	0.295
		CV %	2.6	2.3	2.7	3.6	2.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.072	0.104	0.091	0.085	0.088
		CV %	0.7	0.7	0.9	1.0	0.8
	between single tests on one day	SD	0.059	0.063	0.062	0.048	0.058
		CV %	0.6	0.4	0.6	0.6	0.6
	between all tests on different days	SD	0.106	0.136	0.115	0.112	0.117
		CV %	1.1	0.9	1.1	1.3	1.1

Optional Parameters

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

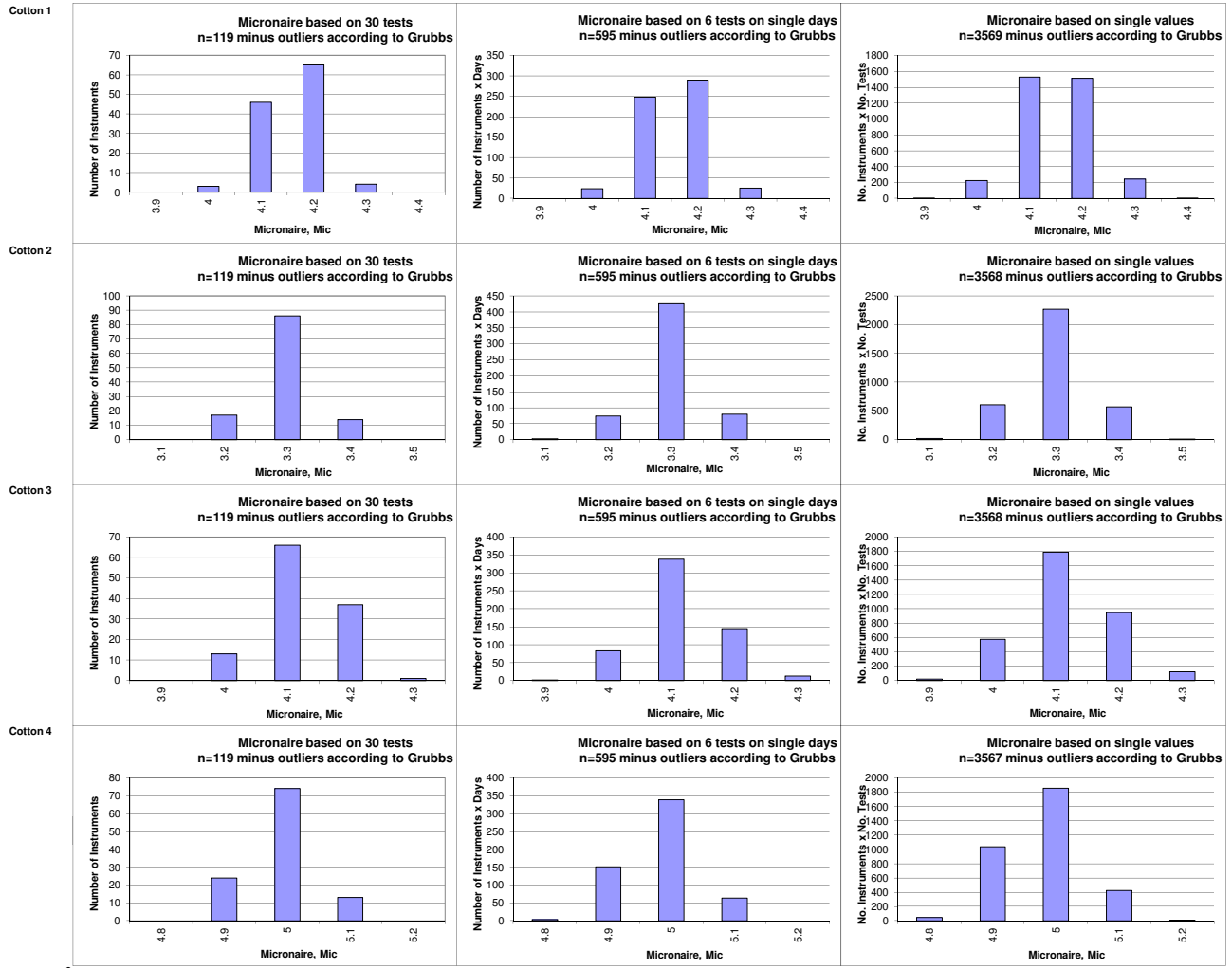
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			25.78	19.77	28.13	14.23	
Reference Values for Evaluation			25.78	19.77	28.13	14.23	
Number Of Instruments			69	69	69	69	69
Inter-Instrument Variation	based on 30 tests	SD	6.58	3.98	7.28	5.66	5.87
		CV %	25.5	20.1	25.9	39.8	27.8
	based on 6 tests	SD	7.71	5.00	8.31	5.40	6.61
		CV %	29.9	25.3	29.5	37.9	30.7
	based on single tests	SD	8.36	6.20	8.81	5.74	7.28
		CV %	32.4	31.4	31.3	40.3	33.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	2.01	2.00	2.61	1.65	2.07
		CV %	7.8	10.1	9.3	11.6	9.7
	between single tests on one day	SD	2.26	2.19	2.68	1.79	2.23
		CV %	8.8	11.1	9.5	12.6	10.5
	between all tests on different days	SD	3.53	3.04	4.22	2.57	3.34
		CV %	13.7	15.4	15.0	18.1	15.5

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.192	0.183	0.298	0.133	
Reference Values for Evaluation			0.192	0.183	0.298	0.133	
Number Of Instruments			69	69	69	69	69
Inter-Instrument Variation	based on 30 tests	SD	0.041	0.049	0.077	0.040	0.052
		CV %	21.5	26.8	25.8	30.4	26.1
	based on 6 tests	SD	0.045	0.052	0.087	0.043	0.057
		CV %	23.5	28.6	29.1	32.8	28.5
	based on single tests	SD	0.050	0.056	0.099	0.047	0.063
		CV %	26.2	30.8	33.1	35.5	31.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.019	0.021	0.038	0.014	0.023
		CV %	9.7	11.3	12.7	10.8	11.1
	between single tests on one day	SD	0.018	0.023	0.038	0.018	0.024
		CV %	9.1	12.9	12.7	13.7	12.1
	between all tests on different days	SD	0.030	0.037	0.059	0.027	0.038
		CV %	15.5	20.2	19.6	20.6	19.0

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.46	83.93	85.72	87.98	
Reference Values for Evaluation			85.46	83.93	85.72	87.98	
Number Of Instruments			64	64	64	64	64
Inter-Instrument Variation	based on 30 tests	SD	0.68	0.70	0.85	0.77	0.75
		CV %	0.8	0.8	1.0	0.9	0.9
	based on 6 tests	SD	0.71	0.73	0.83	0.79	0.76
		CV %	0.8	0.9	1.0	0.9	0.9
	based on single tests	SD	0.72	0.77	0.85	0.82	0.79
		CV %	0.8	0.9	1.0	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.13	0.09	0.13	0.08	0.10
		CV %	0.1	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.18	0.13	0.16	0.10	0.14
		CV %	0.2	0.2	0.2	0.1	0.2
	between all tests on different days	SD	0.27	0.20	0.25	0.18	0.23
		CV %	0.3	0.2	0.3	0.2	0.3

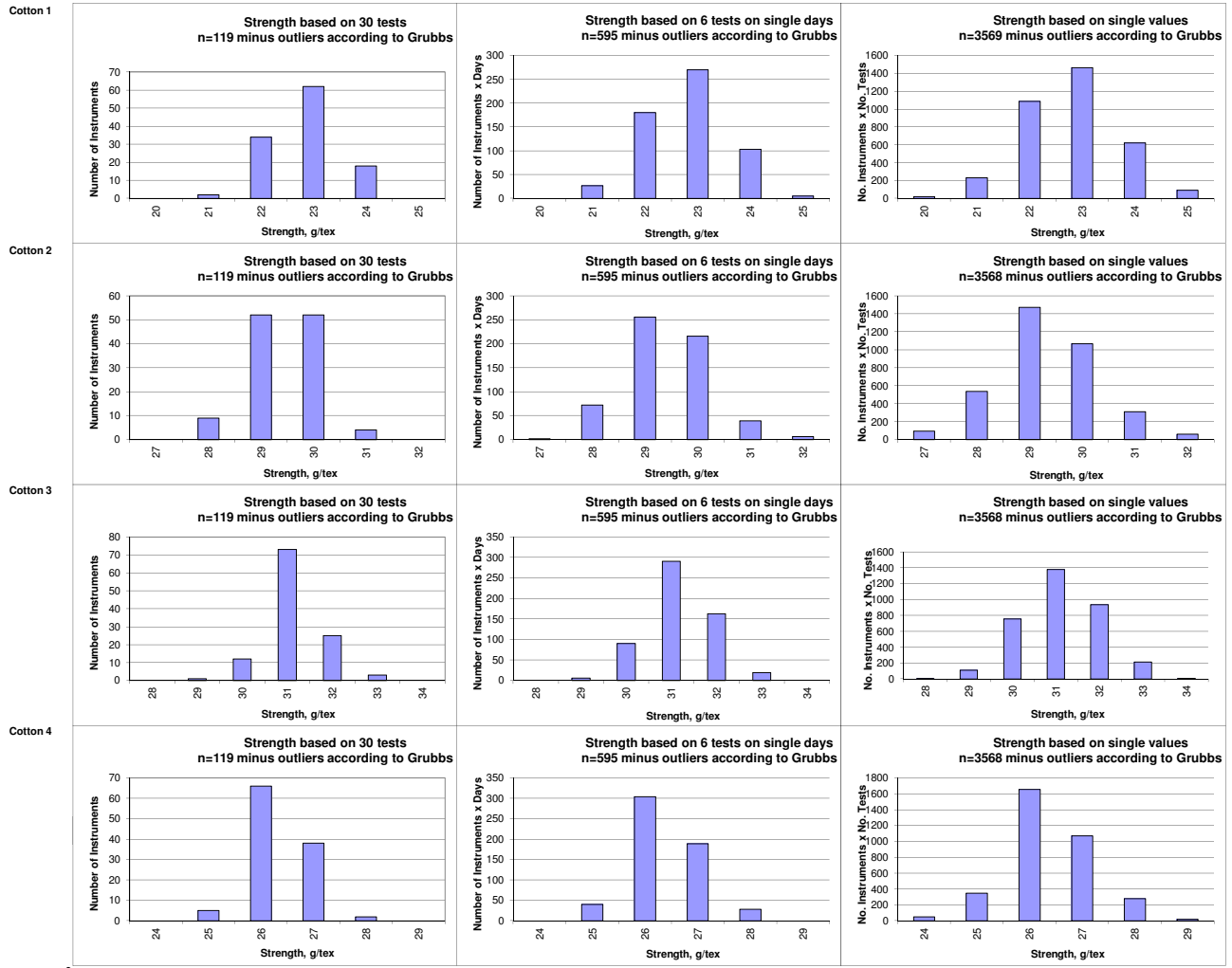
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			18.02	9.90	7.41	12.90	
Reference Values for Evaluation			18.02	9.90	7.41	12.90	
Number Of Instruments			71	71	71	71	71
Inter-Instrument Variation	based on 30 tests	SD	2.32	1.03	0.89	1.27	1.38
		CV %	12.9	10.4	12.0	9.8	11.3
	based on 6 tests	SD	2.32	0.92	0.92	1.31	1.37
		CV %	12.8	9.3	12.4	10.1	11.2
	based on single tests	SD	2.48	1.16	1.05	1.57	1.57
		CV %	13.8	11.7	14.2	12.2	13.0
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.52	0.30	0.19	0.39	0.35
		CV %	2.9	3.1	2.6	3.0	2.9
	between single tests on one day	SD	1.01	0.50	0.38	0.62	0.63
		CV %	5.6	5.0	5.2	4.8	5.2
	between all tests on different days	SD	1.12	0.56	0.44	0.74	0.71
		CV %	6.2	5.7	5.9	5.7	5.9

Test Result Distributions
Micronaire



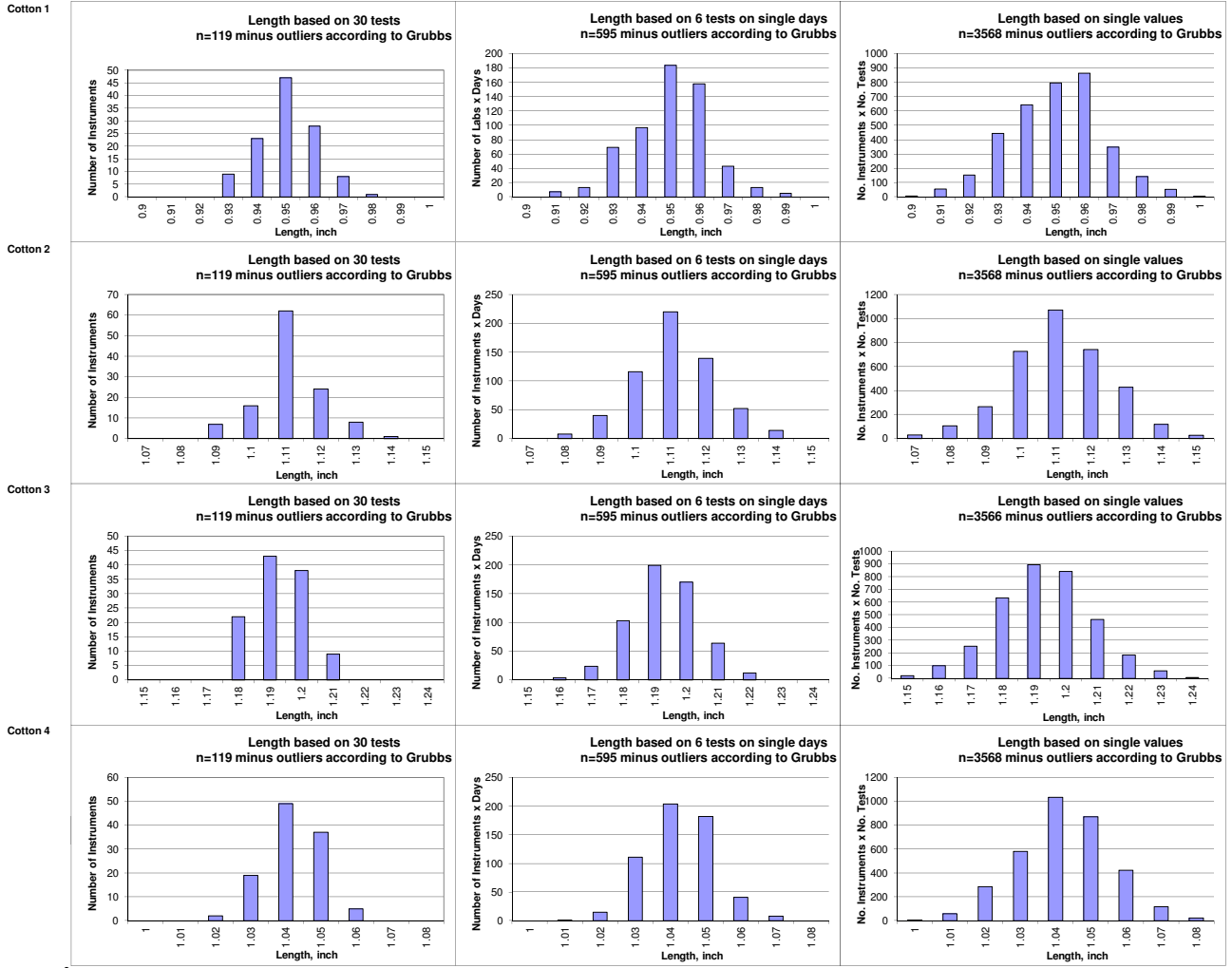
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



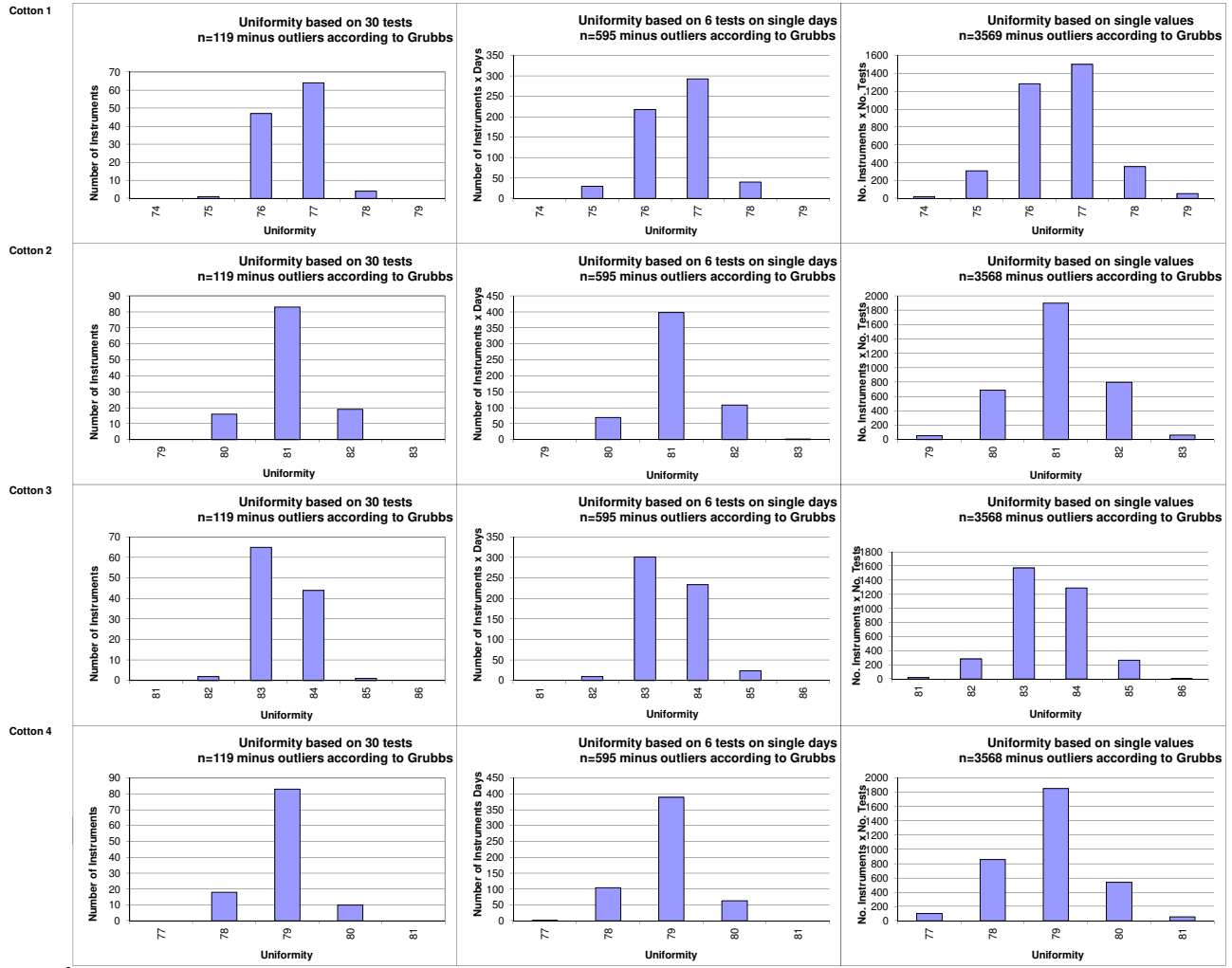
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



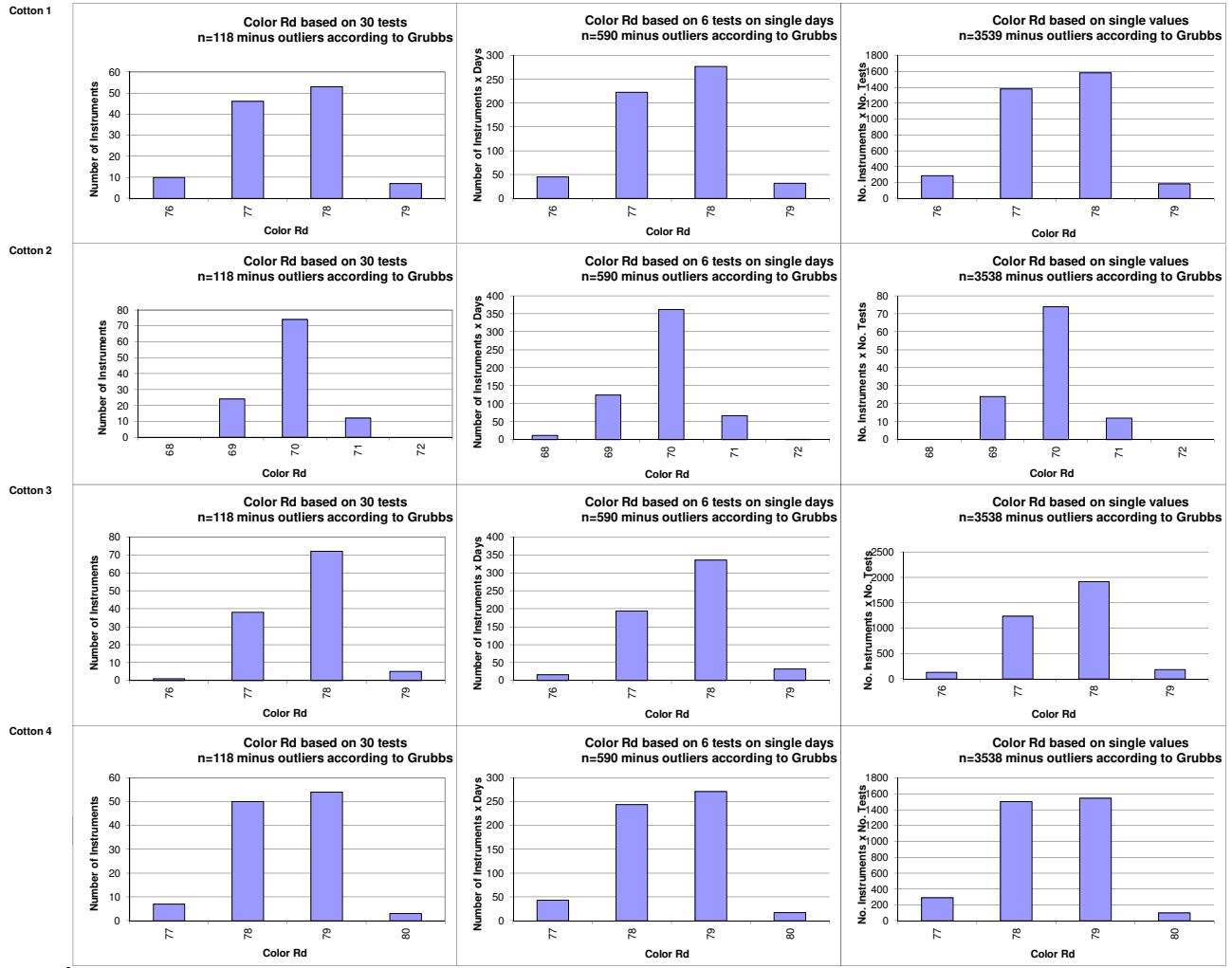
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



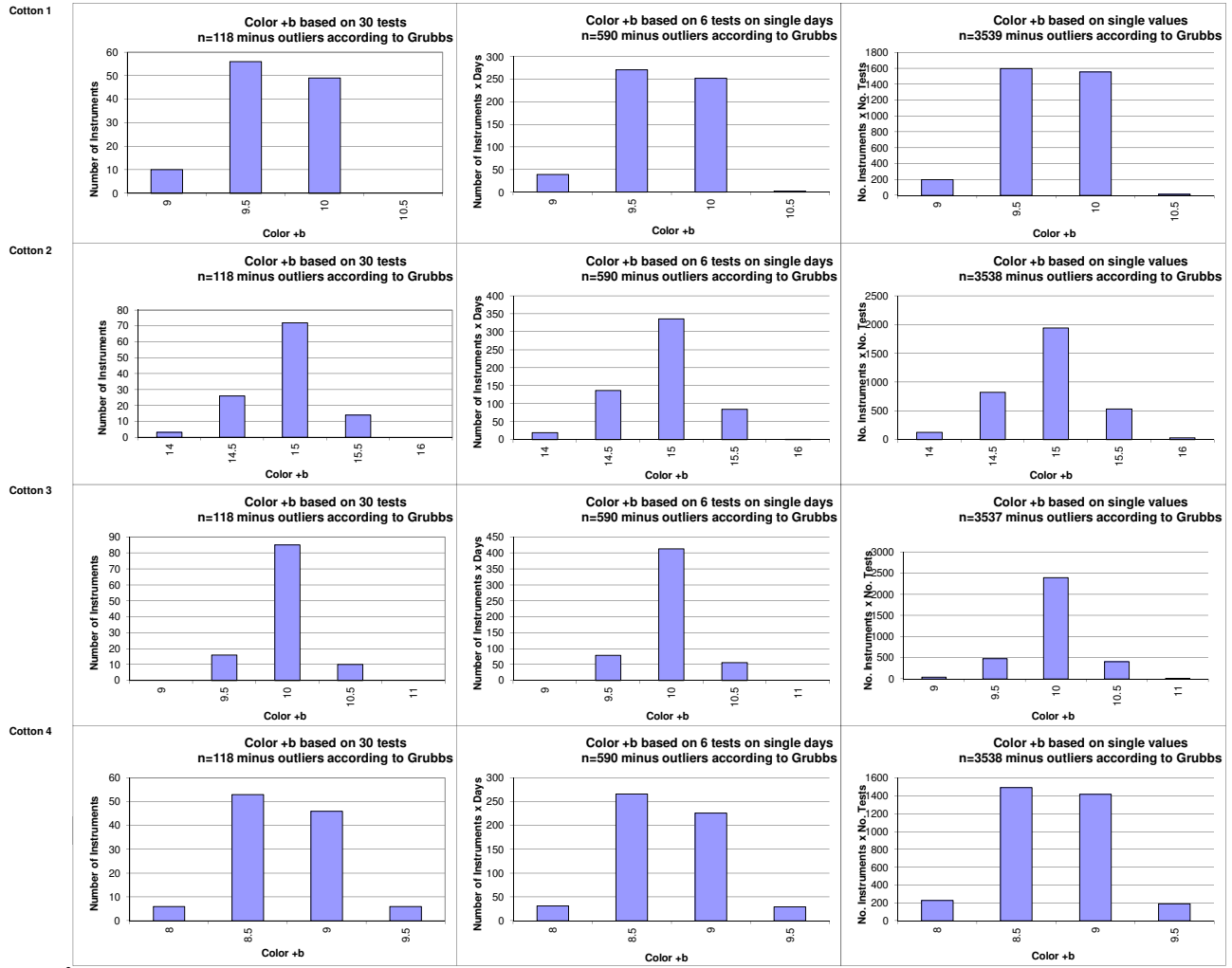
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



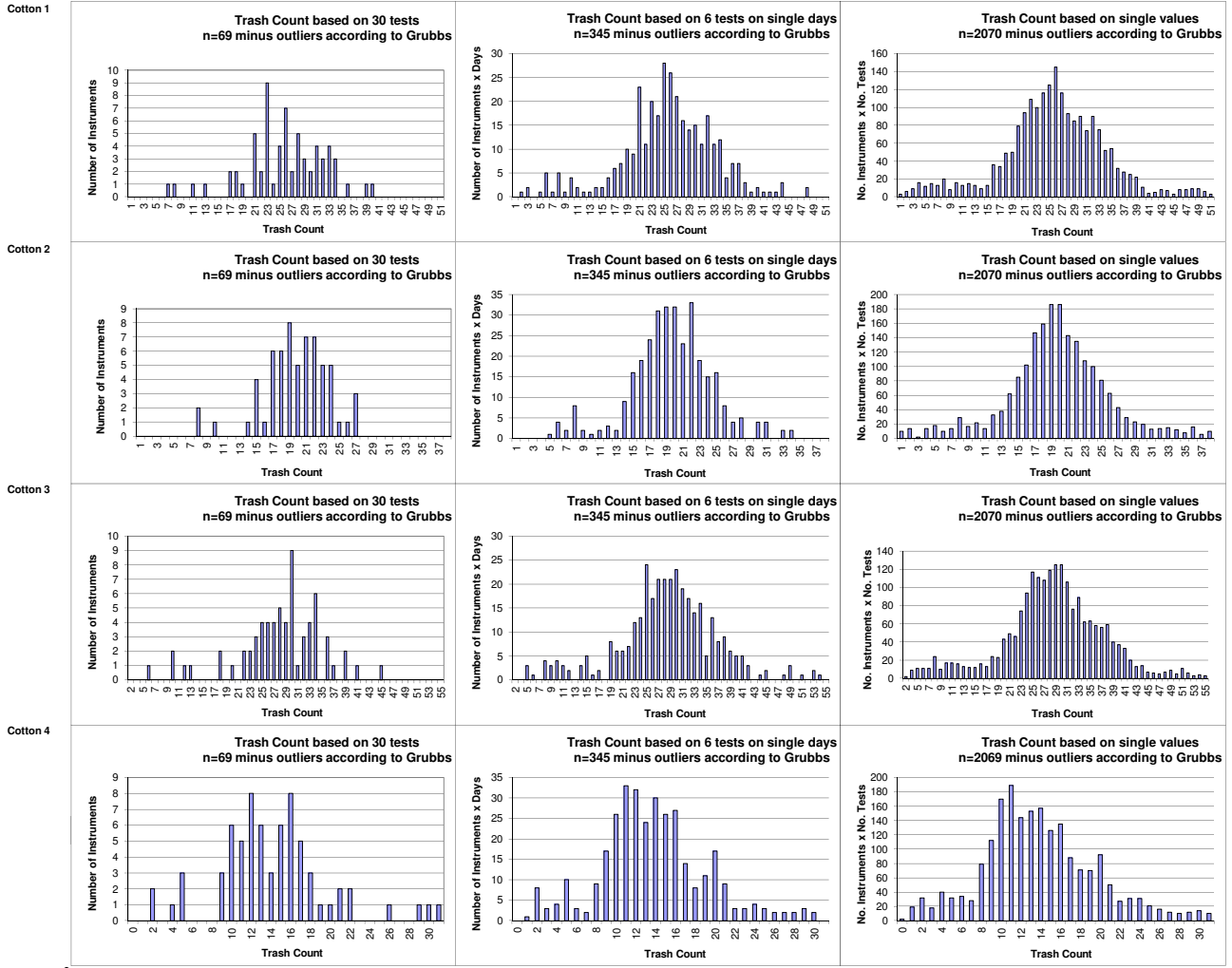
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



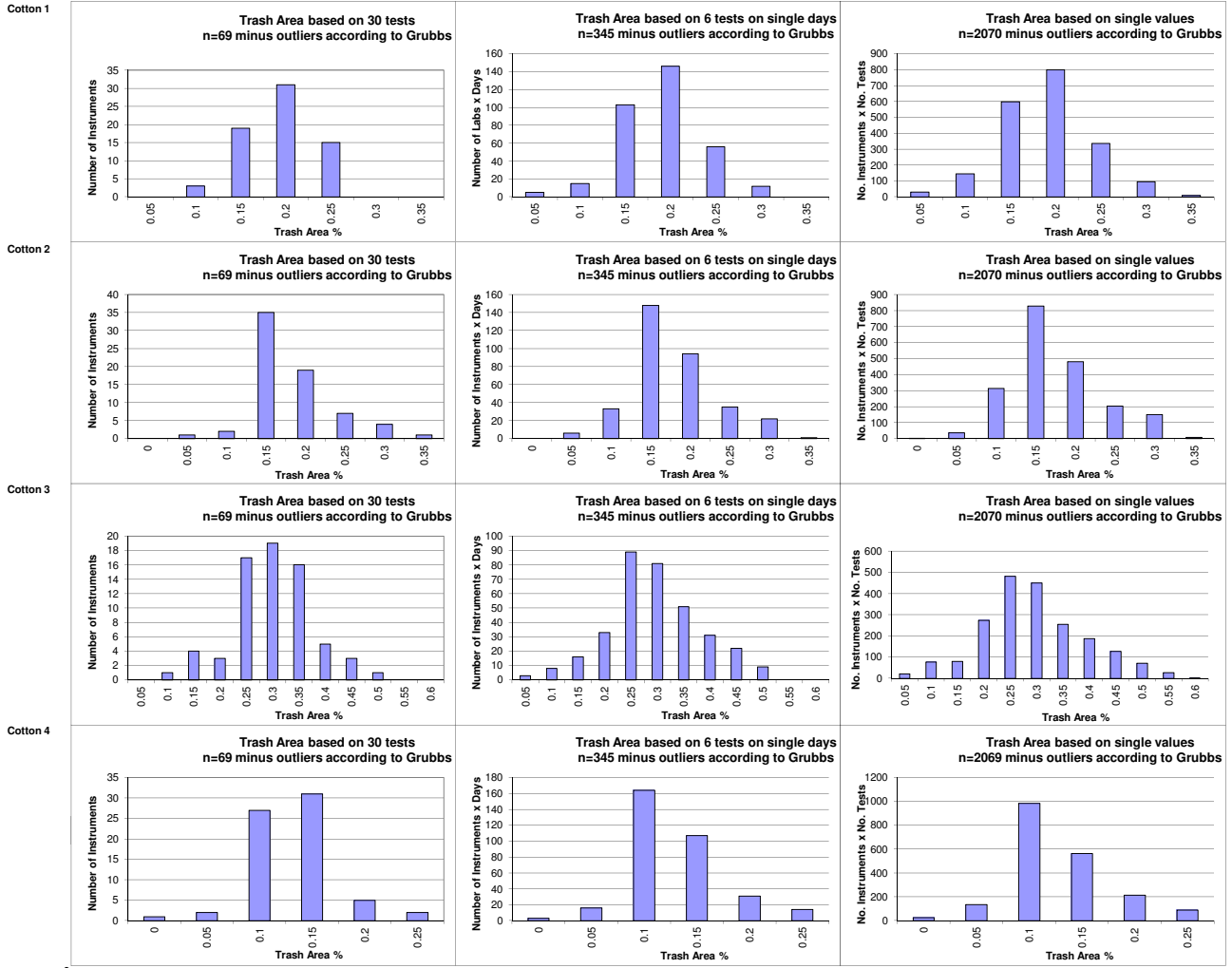
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



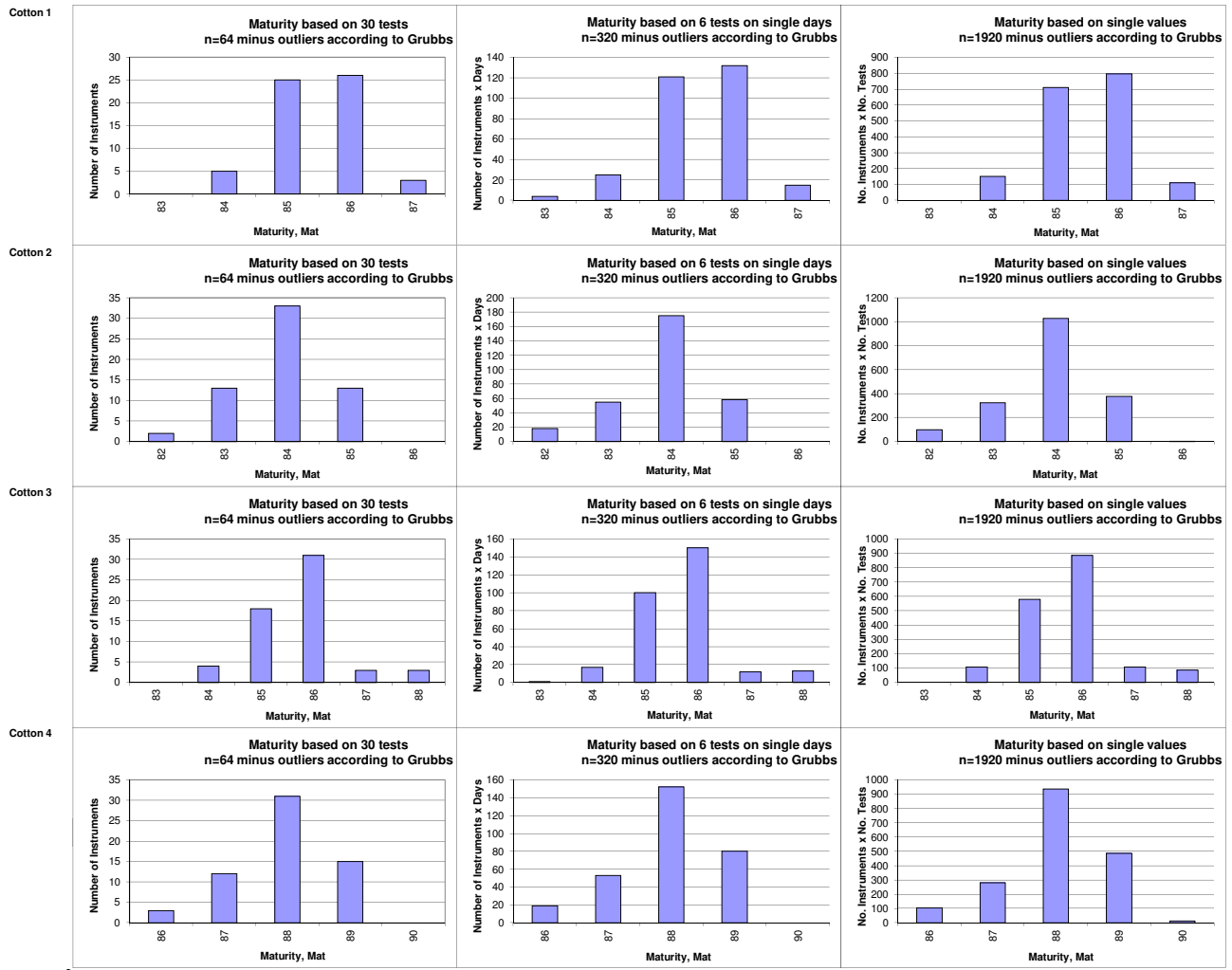
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



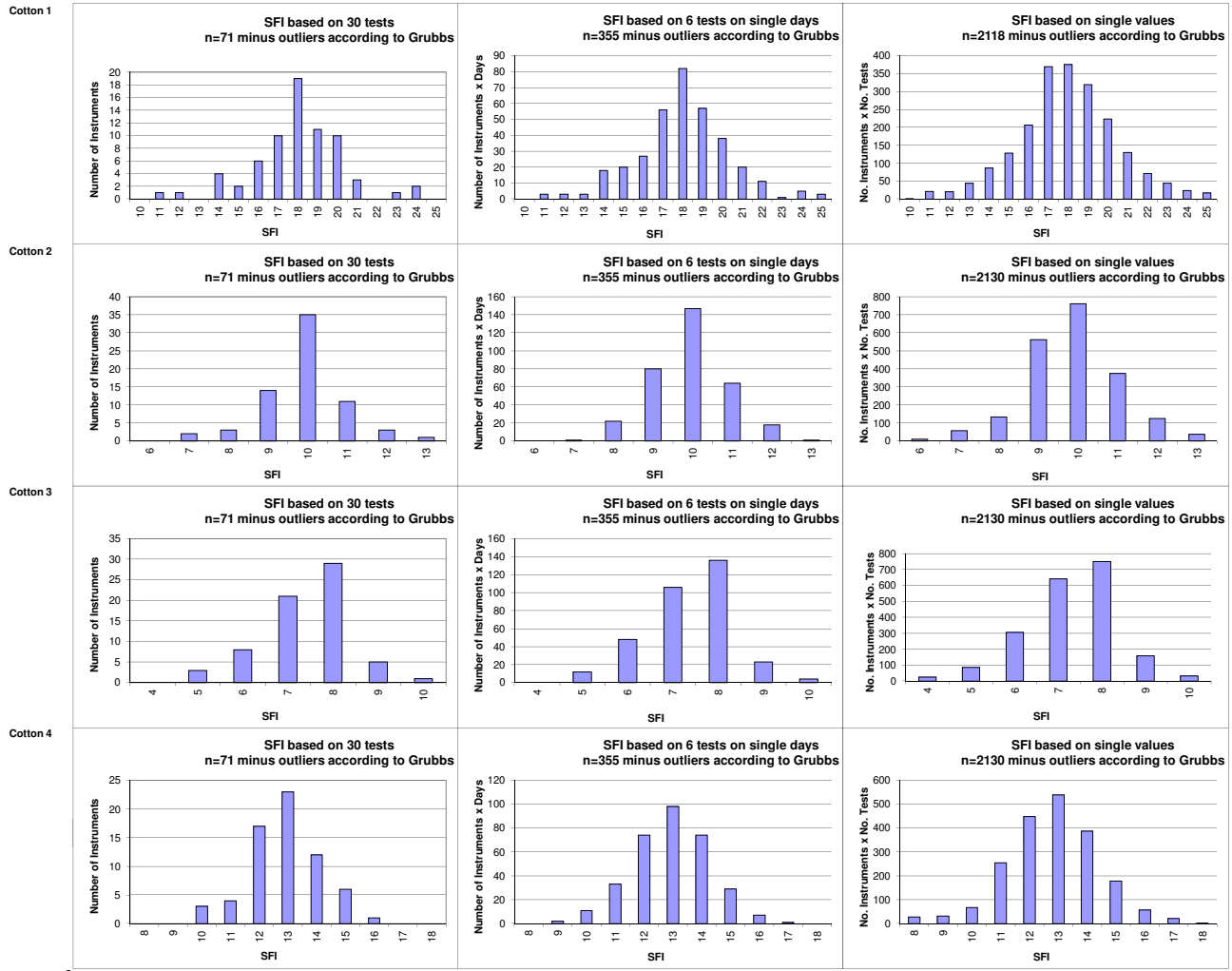
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2020 - 4 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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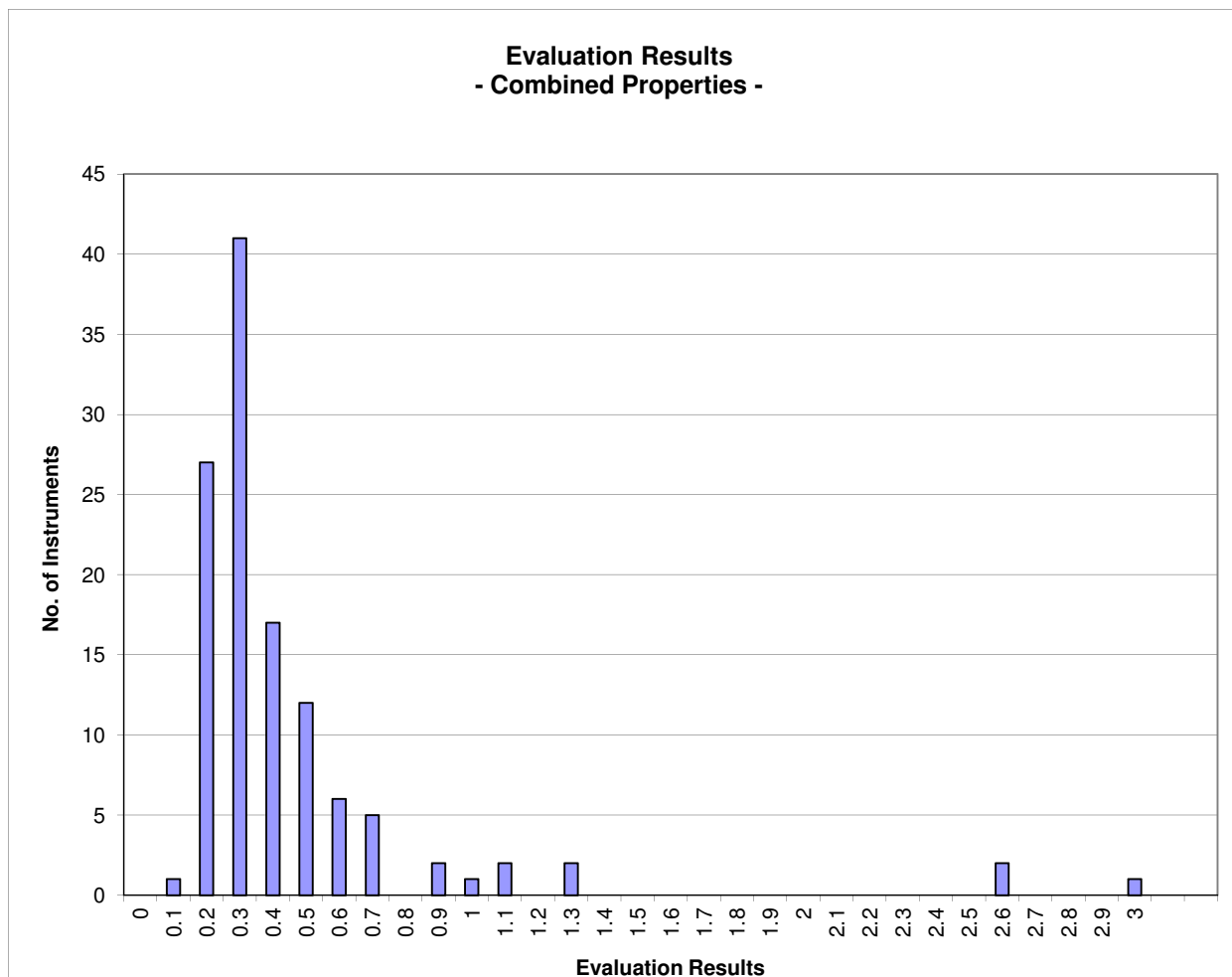
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2020 - 4

		Evaluation Combined Prop.
Statistics	Average	0.45
	Median	0.33
	Best Instrument	0.15
	Worst Instrument	2.96



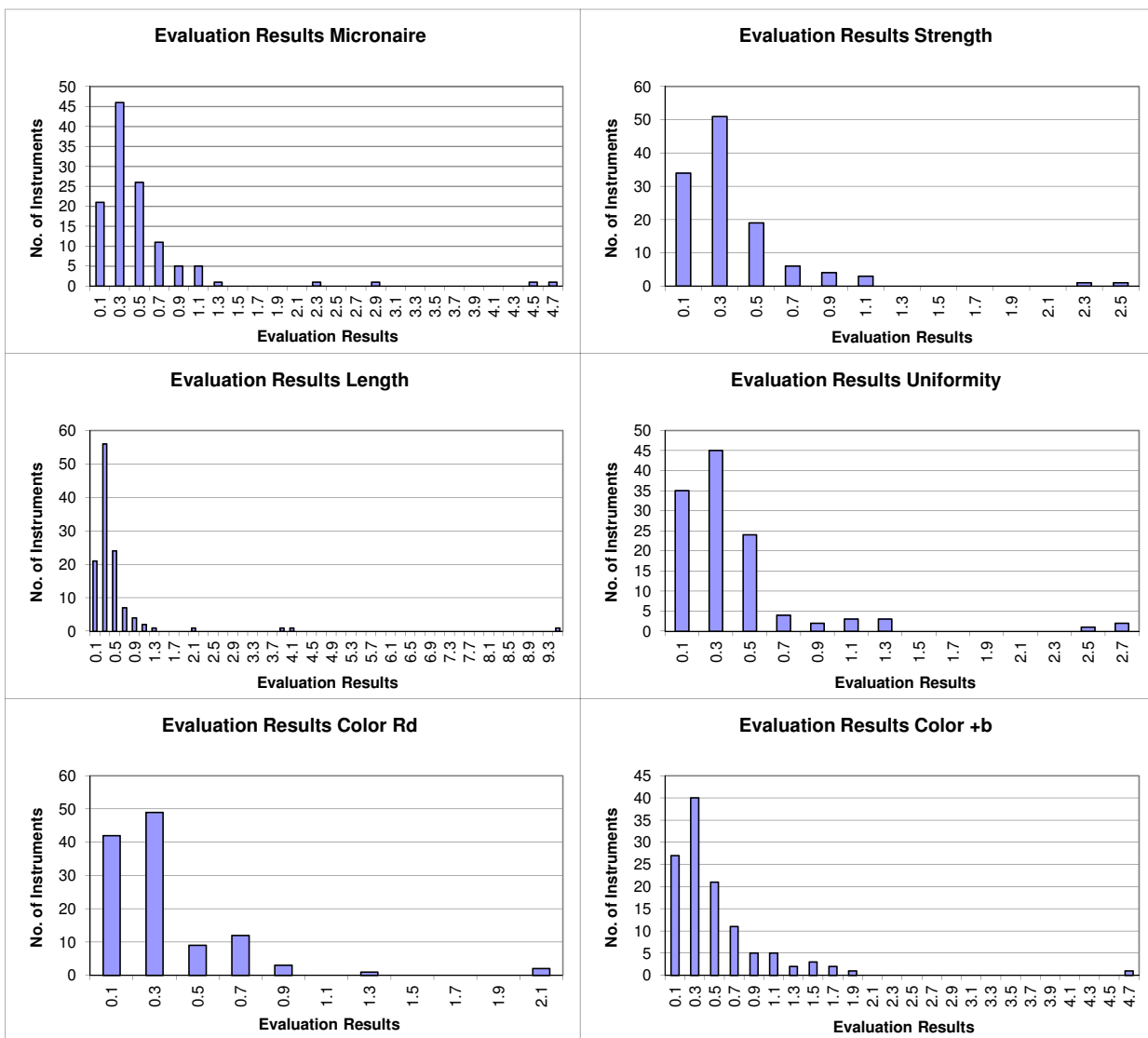
x-Axis shows midpoints of classes

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 2020 - 4

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.53	0.37	0.53	0.41	0.33	0.52
	Median	0.36	0.25	0.33	0.27	0.25	0.37
	Best Instr.	0.09	0.07	0.05	0.03	0.04	0.07
	Worst Instr.	4.71	2.55	9.49	2.68	2.17	4.67



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



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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	97.9	97.1	97.1	97.9	95.3	86.7
Completely within limits	94.1	90.8	93.3	95.8	88.1	72.0
% of Instruments $\geq 75\%$ within limits	97.5	98.3	96.6	97.5	96.6	84.7
% of Instruments $\geq 50\%$ within limits	100.0	99.2	99.2	99.2	98.3	93.2

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	97.3	94.3	95.1	96.2	94.9	84.8
% of Instruments 100% within limits	72.3	37.8	36.1	52.1	70.3	43.2
% of Instruments $\geq 95\%$ within limits	92.4	74.8	79.0	84.9	84.7	54.2
% of Instruments $\geq 75\%$ within limits	96.6	93.3	95.8	96.6	91.5	78.8
% of Instruments $\geq 65\%$ within limits	96.6	96.6	97.5	97.5	95.8	85.6
% of Instruments $\geq 50\%$ within limits	100.0	98.3	98.3	97.5	98.3	91.5