



International Cotton Advisory Committee



CSITC Global - Round Trial 2021 - 3 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 2021 - 3

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

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			4.351	3.946	4.231	4.447	
Reference Values for Evaluation			4.351	3.946	4.231	4.447	
Number Of Instruments			133	133	133	133	133
Inter-Instrument Variation	based on 30 tests	SD	0.047	0.054	0.046	0.047	0.049
		CV %	1.1	1.4	1.1	1.1	1.2
	based on 6 tests	SD	0.053	0.060	0.047	0.054	0.054
		CV %	1.2	1.5	1.1	1.2	1.3
	based on single tests	SD	0.064	0.070	0.058	0.062	0.064
		CV %	1.5	1.8	1.4	1.4	1.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.025	0.024	0.022	0.021	0.023
		CV %	0.6	0.6	0.5	0.5	0.6
	between single tests on one day	SD	0.034	0.035	0.033	0.031	0.033
		CV %	0.8	0.9	0.8	0.7	0.8
	between all tests on different days	SD	0.042	0.043	0.040	0.038	0.041
		CV %	1.0	1.1	0.9	0.9	1.0

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			27.878	25.330	30.458	34.502	
Reference Values for Evaluation			27.878	25.330	30.458	34.502	
Number Of Instruments			133	133	133	133	133
Inter-Instrument Variation	based on 30 tests	SD	0.799	0.913	0.549	0.734	0.749
		CV %	2.9	3.6	1.8	2.1	2.6
	based on 6 tests	SD	0.798	0.944	0.713	0.820	0.819
		CV %	2.9	3.7	2.3	2.4	2.8
	based on single tests	SD	0.902	1.086	0.968	0.989	0.986
		CV %	3.2	4.3	3.2	2.9	3.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.316	0.333	0.358	0.342	0.337
		CV %	1.1	1.3	1.2	1.0	1.2
	between single tests on one day	SD	0.531	0.598	0.653	0.565	0.587
		CV %	1.9	2.4	2.1	1.6	2.0
	between all tests on different days	SD	0.612	0.685	0.728	0.663	0.672
		CV %	2.2	2.7	2.4	1.9	2.3

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.0575	0.9941	1.1360	1.2080	
Reference Values for Evaluation			1.0575	0.9941	1.1360	1.2080	
Number Of Instruments			133	133	133	133	133
Inter-Instrument Variation	based on 30 tests	SD	0.0083	0.0080	0.0097	0.0113	0.0093
		CV %	0.8	0.8	0.9	0.9	0.8
	based on 6 tests	SD	0.0095	0.0099	0.0115	0.0123	0.0108
		CV %	0.9	1.0	1.0	1.0	1.0
	based on single tests	SD	0.0133	0.0145	0.0161	0.0154	0.0148
		CV %	1.3	1.5	1.4	1.3	1.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0051	0.0053	0.0060	0.0054	0.0055
		CV %	0.5	0.5	0.5	0.4	0.5
	between single tests on one day	SD	0.0099	0.0104	0.0118	0.0098	0.0105
		CV %	0.9	1.0	1.0	0.8	1.0
	between all tests on different days	SD	0.0109	0.0118	0.0134	0.0109	0.0117
		CV %	1.0	1.2	1.2	0.9	1.1

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			80.877	78.144	80.180	83.457	
Reference Values for Evaluation			80.877	78.144	80.180	83.457	
Number Of Instruments			133	133	133	133	133
Inter-Instrument Variation	based on 30 tests	SD	0.489	0.464	0.424	0.466	0.461
		CV %	0.6	0.6	0.5	0.6	0.6
	based on 6 tests	SD	0.526	0.540	0.523	0.519	0.527
		CV %	0.6	0.7	0.7	0.6	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.690	0.750	0.743	0.657	0.710
		CV %	0.9	1.0	0.9	0.8	0.9
	between different days with each 6 tests	SD	0.235	0.259	0.285	0.232	0.253
		CV %	0.3	0.3	0.4	0.3	0.3
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.465	0.523	0.574	0.408	0.493
		CV %	0.6	0.7	0.7	0.5	0.6
	between all tests on different days	SD	0.511	0.610	0.608	0.459	0.547
		CV %	0.6	0.8	0.8	0.5	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			74.065	78.591	77.136	76.749	
Reference Values for Evaluation			74.065	78.591	77.136	76.749	
Number Of Instruments			132	132	132	132	132
Inter-Instrument Variation	based on 30 tests	SD	0.441	0.446	0.438	0.437	0.440
		CV %	0.6	0.6	0.6	0.6	0.6
	based on 6 tests	SD	0.471	0.474	0.456	0.496	0.474
		CV %	0.6	0.6	0.6	0.6	0.6
Typical within-instrument Variation (Median)	based on single tests	SD	0.495	0.512	0.483	0.491	0.495
		CV %	0.7	0.7	0.6	0.6	0.6
	between different days with each 6 tests	SD	0.169	0.143	0.147	0.157	0.154
		CV %	0.2	0.2	0.2	0.2	0.2
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.114	0.105	0.109	0.099	0.107
		CV %	0.2	0.1	0.1	0.1	0.1
	between all tests on different days	SD	0.227	0.186	0.210	0.198	0.205
		CV %	0.3	0.2	0.3	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			13.580	11.493	10.486	12.996	
Reference Values for Evaluation			13.580	11.493	10.486	12.996	
Number Of Instruments			132	132	132	132	132
Inter-Instrument Variation	based on 30 tests	SD	0.323	0.205	0.226	0.262	0.254
		CV %	2.4	1.8	2.2	2.0	2.1
	based on 6 tests	SD	0.355	0.225	0.241	0.283	0.276
		CV %	2.6	2.0	2.3	2.2	2.3
Typical within-instrument Variation (Median)	based on single tests	SD	0.362	0.244	0.255	0.304	0.291
		CV %	2.7	2.1	2.4	2.3	2.4
	between different days with each 6 tests	SD	0.096	0.087	0.088	0.087	0.090
		CV %	0.7	0.8	0.8	0.7	0.7
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.059	0.058	0.055	0.066	0.059
		CV %	0.4	0.5	0.5	0.5	0.5
	between all tests on different days	SD	0.128	0.128	0.107	0.119	0.120
		CV %	0.9	1.1	1.0	0.9	1.0

Optional Parameters

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

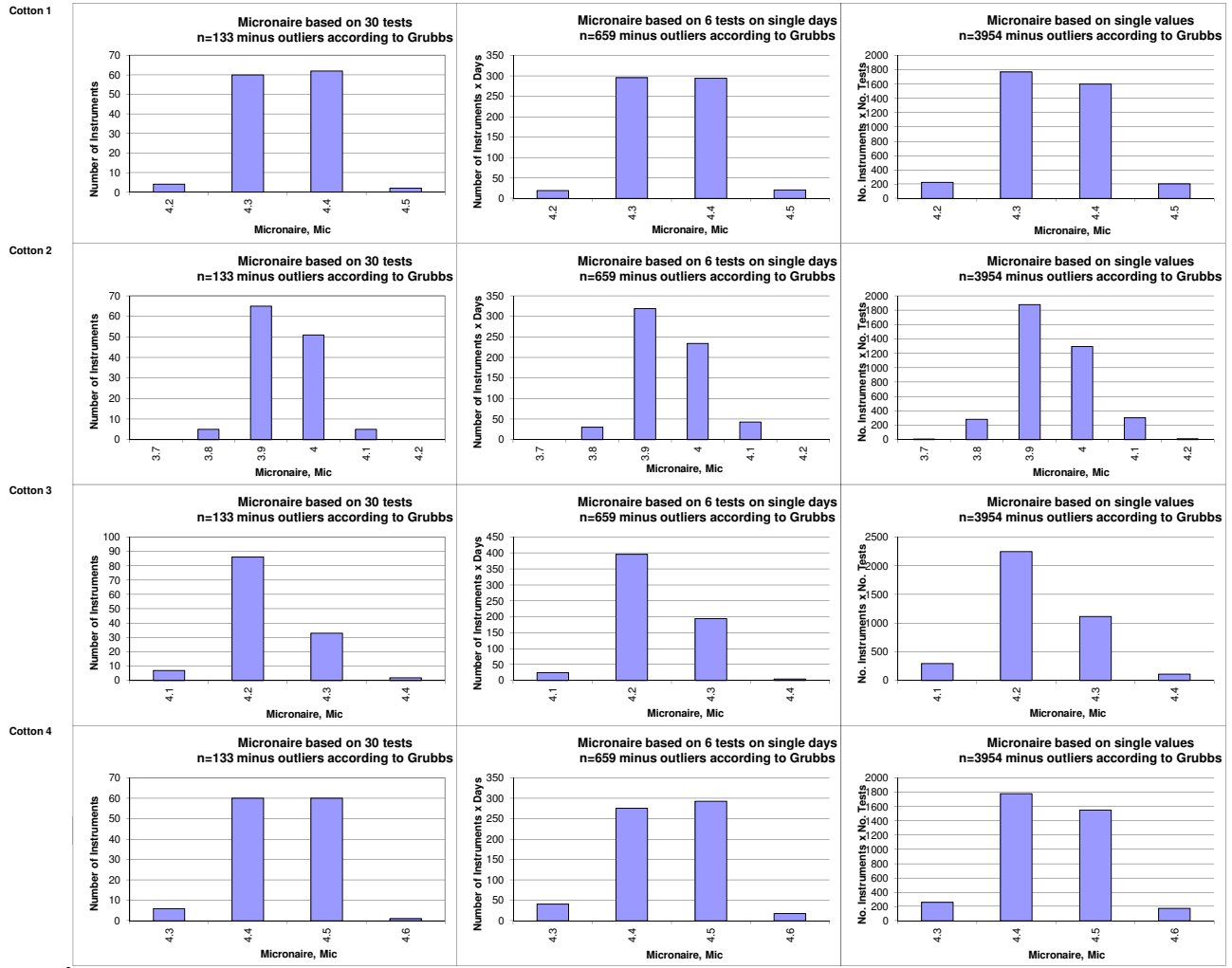
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			11.34	15.61	23.22	16.65	
Reference Values for Evaluation			11.34	15.61	23.22	16.65	
Number Of Instruments			91	91	91	91	91
Inter-Instrument Variation	based on 30 tests	SD	3.18	4.57	6.03	4.27	4.51
		CV %	28.0	29.3	25.9	25.6	27.2
	based on 6 tests	SD	3.59	4.90	6.20	4.55	4.81
		CV %	31.7	31.4	26.7	27.3	29.3
	based on single tests	SD	4.05	5.25	6.49	5.10	5.22
		CV %	35.7	33.6	27.9	30.6	32.0
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.31	1.42	1.97	1.34	1.51
		CV %	11.6	9.1	8.5	8.1	9.3
	between single tests on one day	SD	1.43	1.68	2.25	1.77	1.78
		CV %	12.6	10.8	9.7	10.6	10.9
	between all tests on different days	SD	2.26	2.49	3.13	2.53	2.60
		CV %	20.0	15.9	13.5	15.2	16.1

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.132	0.126	0.234	0.147	
Reference Values for Evaluation			0.132	0.126	0.234	0.147	
Number Of Instruments			91	91	91	91	91
Inter-Instrument Variation	based on 30 tests	SD	0.033	0.031	0.054	0.036	0.038
		CV %	24.7	24.5	23.0	24.5	24.2
	based on 6 tests	SD	0.038	0.032	0.060	0.036	0.042
		CV %	28.7	25.6	25.7	24.5	26.1
	based on single tests	SD	0.042	0.036	0.072	0.040	0.048
		CV %	32.2	28.8	30.8	26.9	29.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.018	0.016	0.029	0.016	0.020
		CV %	13.5	12.3	12.4	11.0	12.3
	between single tests on one day	SD	0.018	0.017	0.026	0.019	0.020
		CV %	13.9	13.1	11.2	13.1	12.9
	between all tests on different days	SD	0.032	0.023	0.050	0.029	0.034
		CV %	24.6	18.4	21.2	19.9	21.0

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.38	85.88	85.98	86.00	
Reference Values for Evaluation			85.38	85.88	85.98	86.00	
Number Of Instruments			84	84	84	84	84
Inter-Instrument Variation	based on 30 tests	SD	0.70	0.69	0.73	0.70	0.70
		CV %	0.8	0.8	0.8	0.8	0.8
	based on 6 tests	SD	0.71	0.73	0.68	0.68	0.70
		CV %	0.8	0.8	0.8	0.8	0.8
	based on single tests	SD	0.83	0.75	0.74	0.74	0.76
		CV %	1.0	0.9	0.9	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.13	0.10	0.09	0.09	0.10
		CV %	0.2	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.19	0.16	0.10	0.11	0.14
		CV %	0.2	0.2	0.1	0.1	0.2
	between all tests on different days	SD	0.31	0.25	0.19	0.25	0.25
		CV %	0.4	0.3	0.2	0.3	0.3

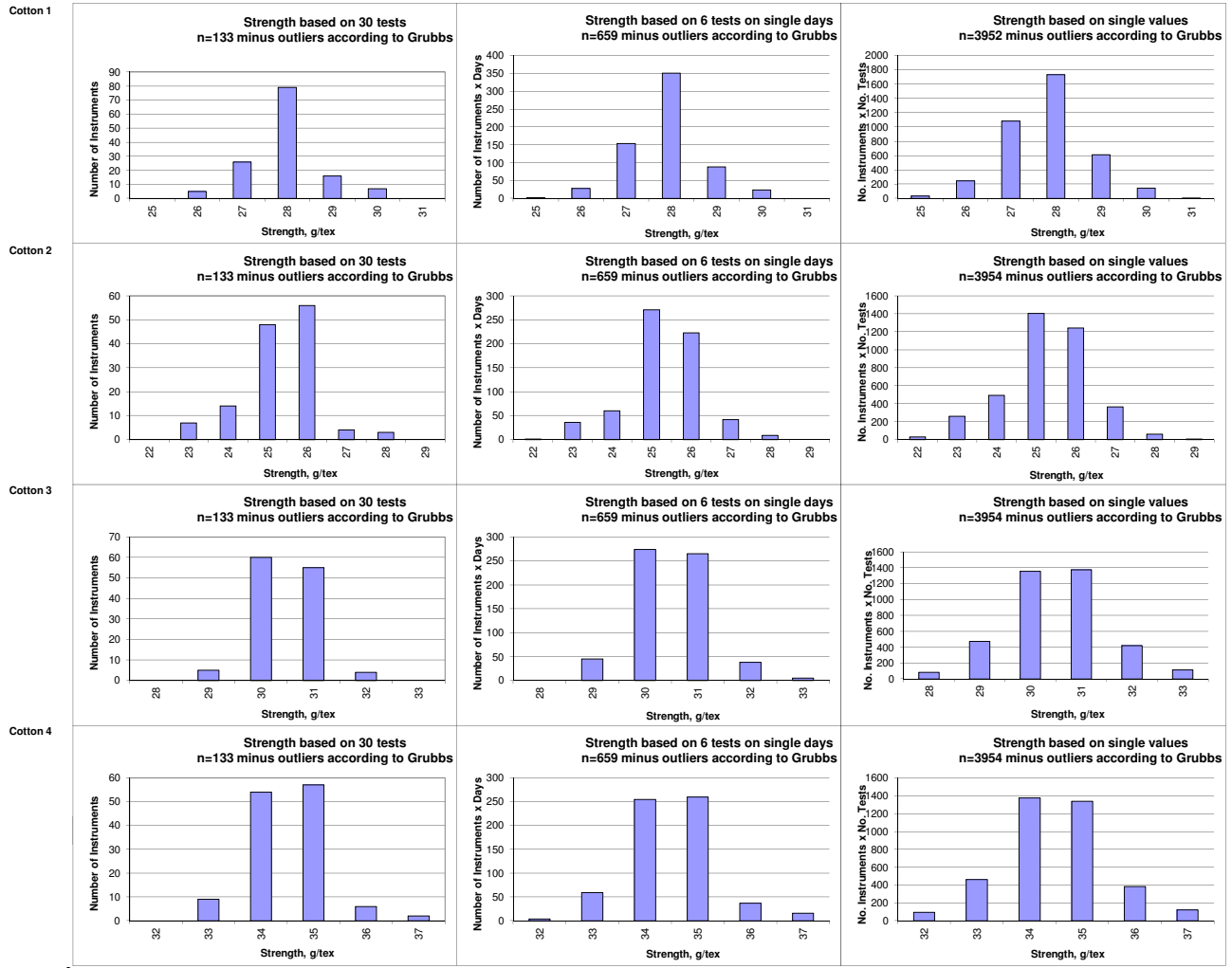
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			9.43	14.34	10.45	7.05	
Reference Values for Evaluation			9.43	14.34	10.45	7.05	
Number Of Instruments			93	93	93	93	93
Inter-Instrument Variation	based on 30 tests	SD	0.94	1.53	1.07	0.67	1.05
		CV %	10.0	10.7	10.2	9.5	10.1
	based on 6 tests	SD	0.91	1.61	1.11	0.71	1.08
		CV %	9.6	11.2	10.6	10.1	10.4
	based on single tests	SD	1.06	1.87	1.24	0.78	1.24
		CV %	11.2	13.0	11.9	11.0	11.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.25	0.44	0.30	0.16	0.29
		CV %	2.7	3.1	2.8	2.3	2.7
	between single tests on one day	SD	0.49	0.76	0.56	0.29	0.53
		CV %	5.2	5.3	5.4	4.1	5.0
	between all tests on different days	SD	0.54	0.89	0.64	0.33	0.60
		CV %	5.7	6.2	6.1	4.7	5.7

Test Result Distributions
Micronaire



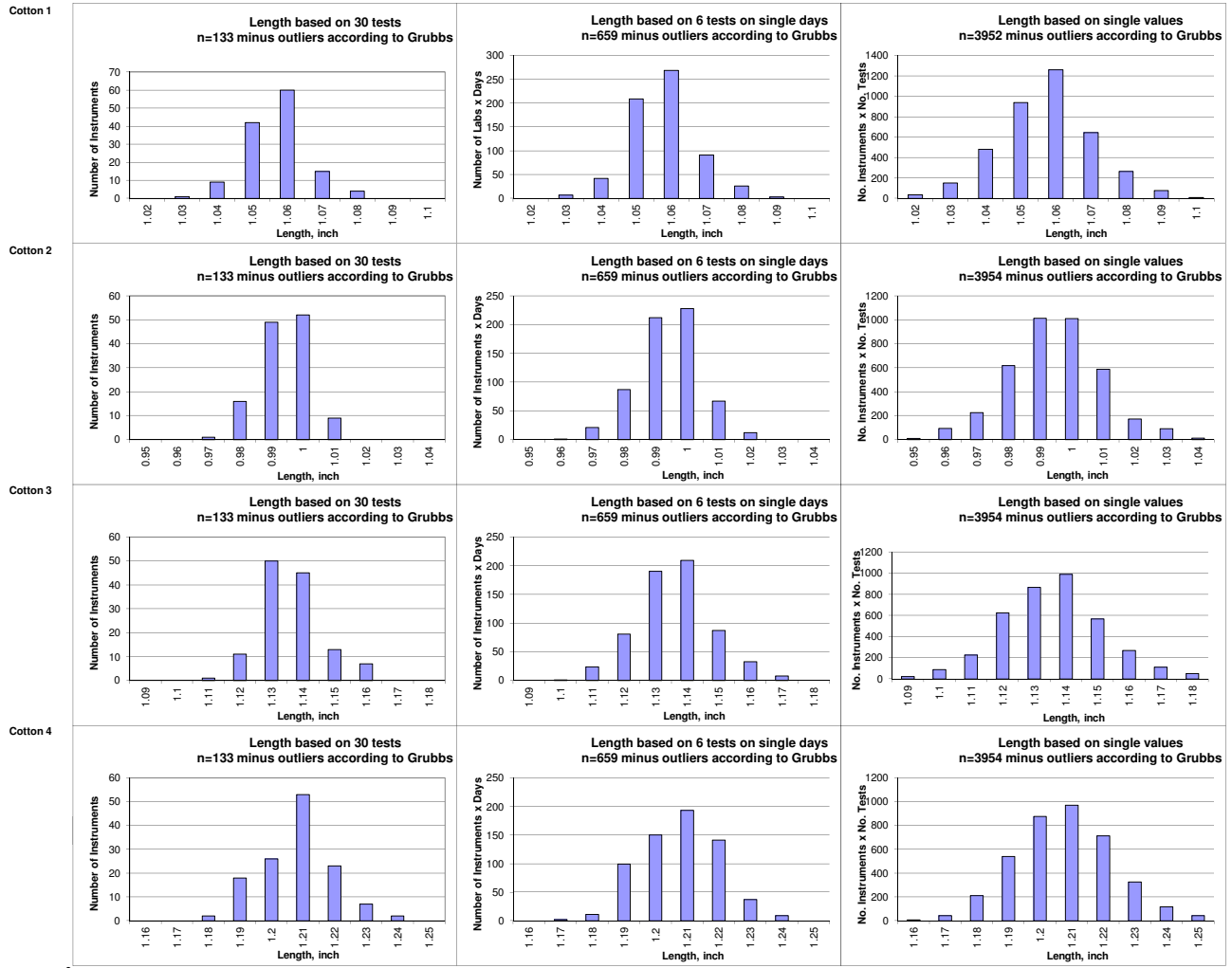
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



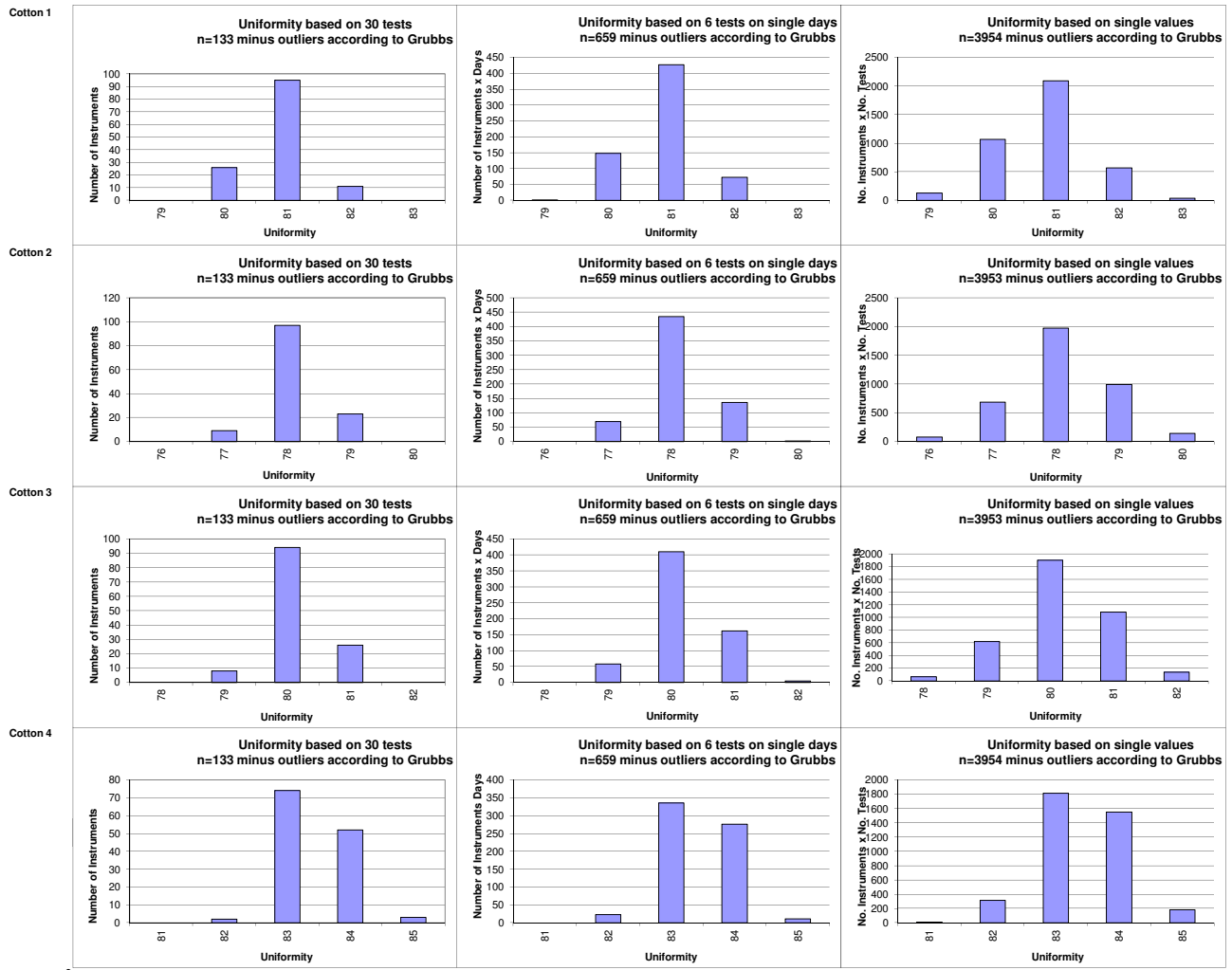
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



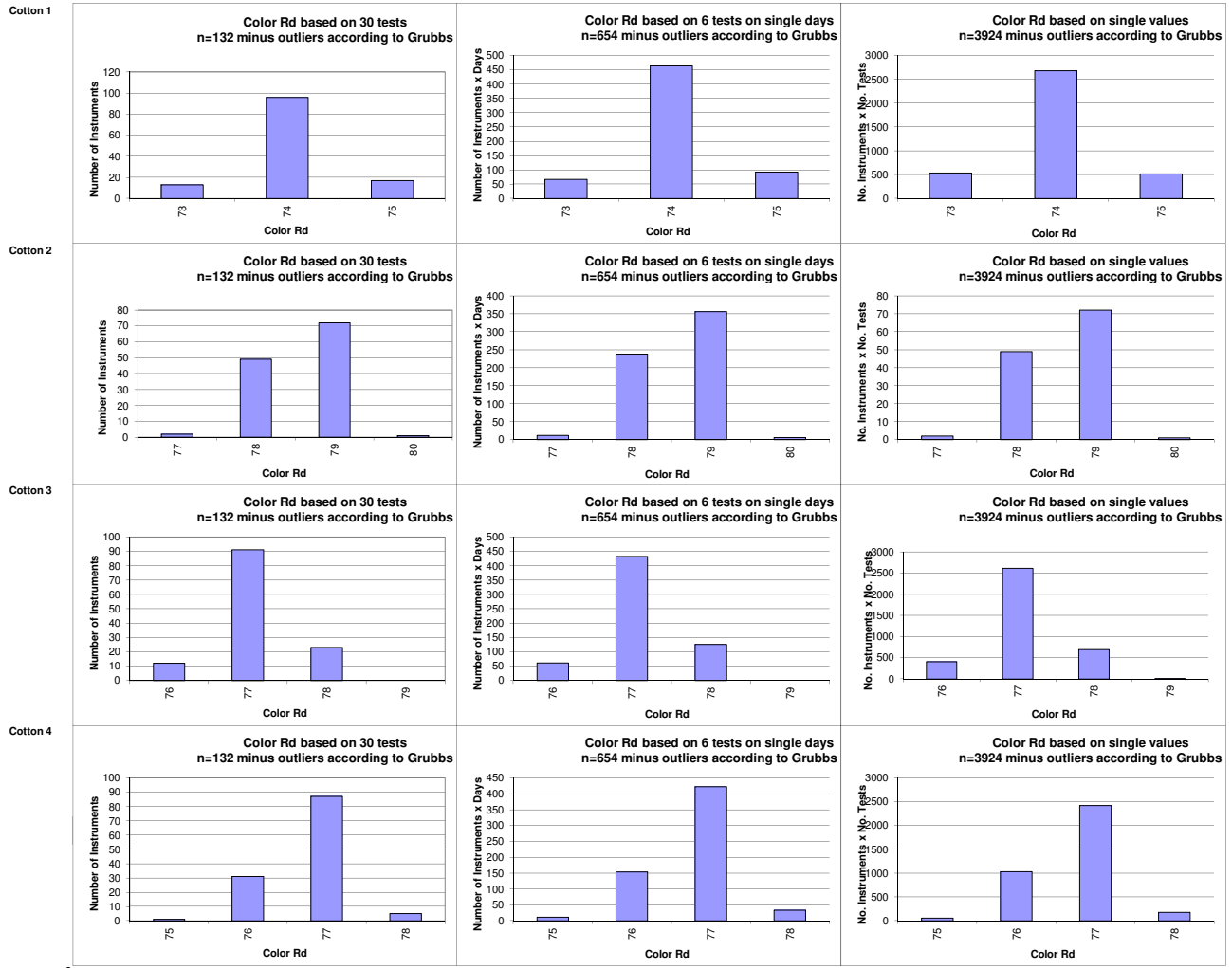
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



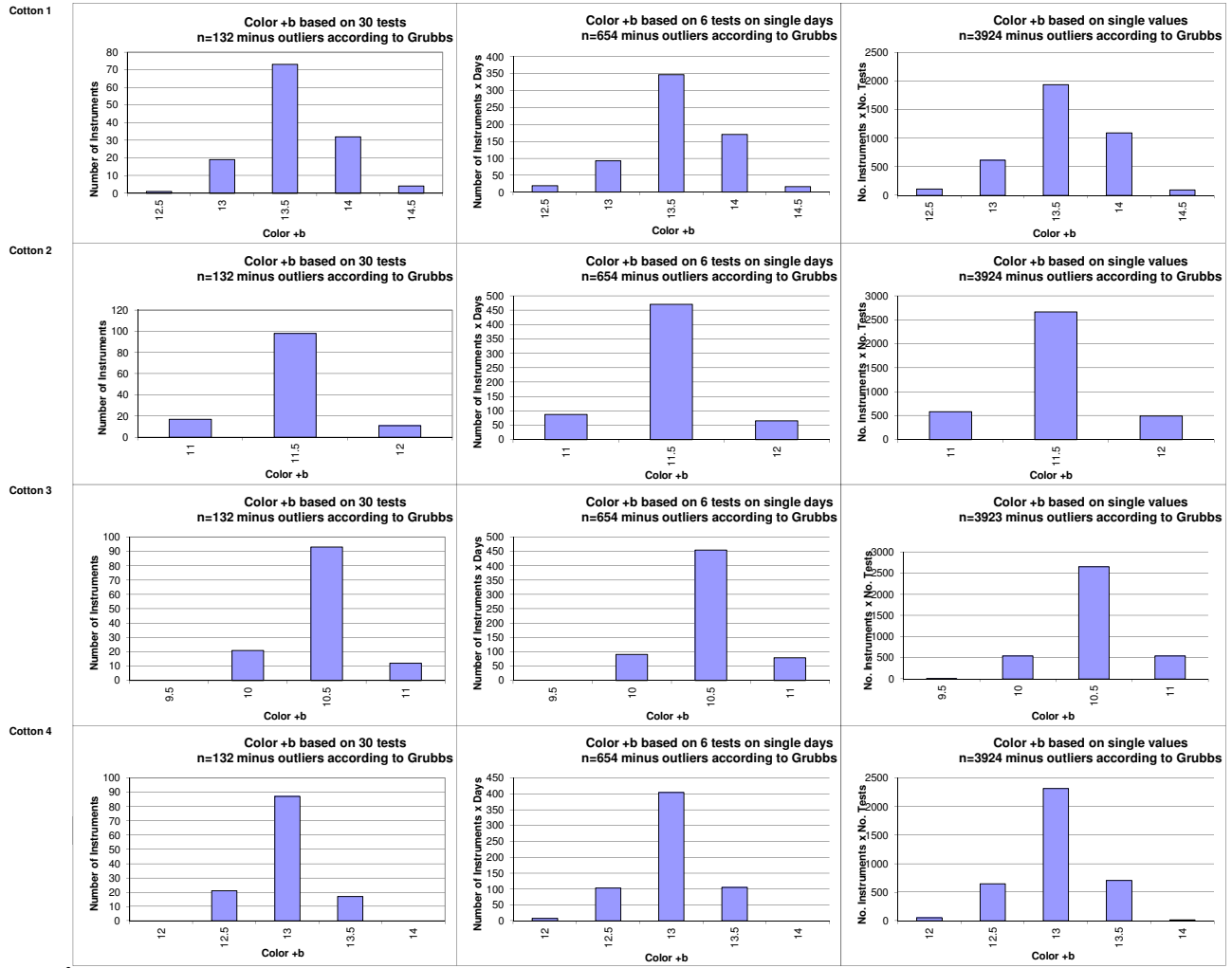
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



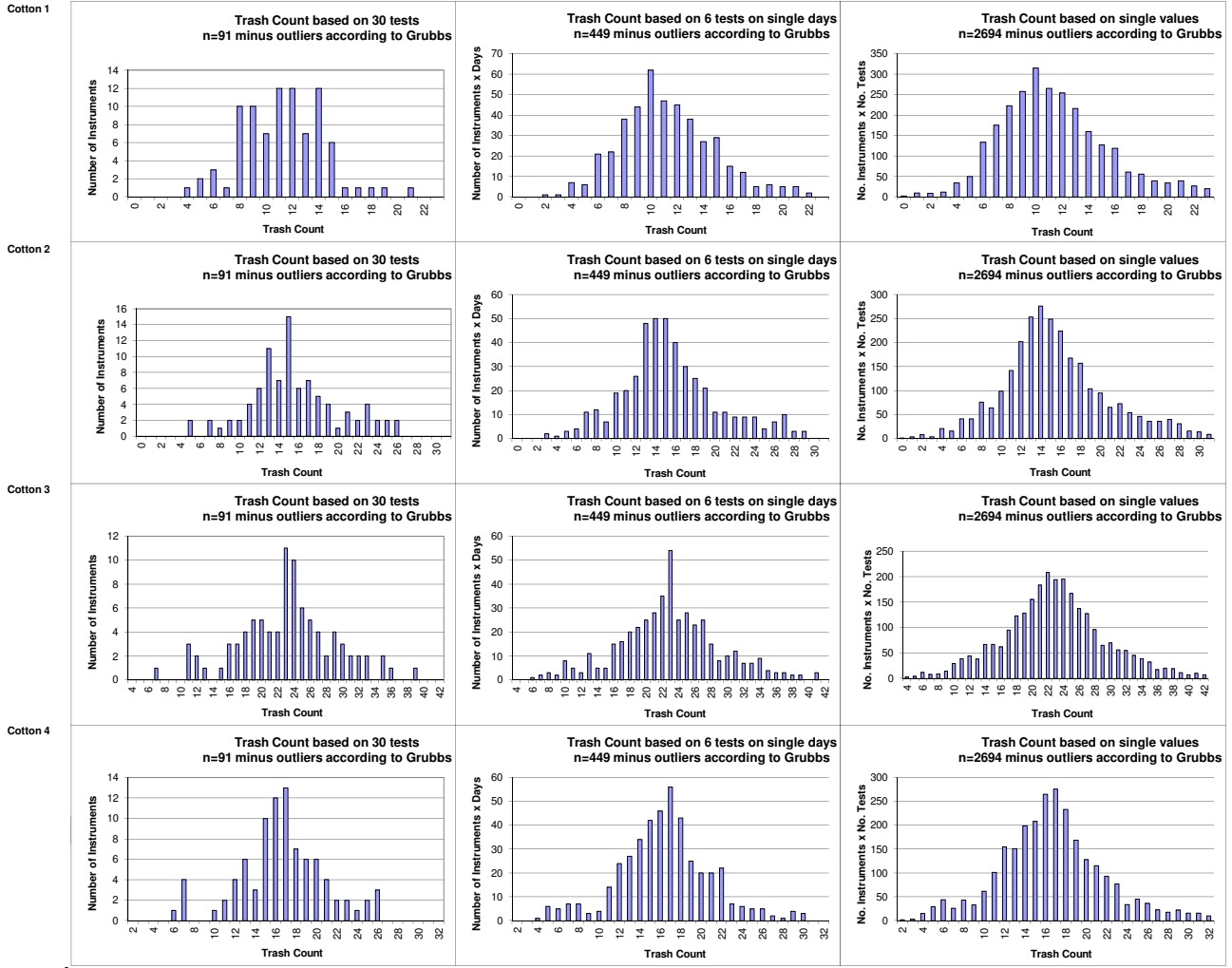
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



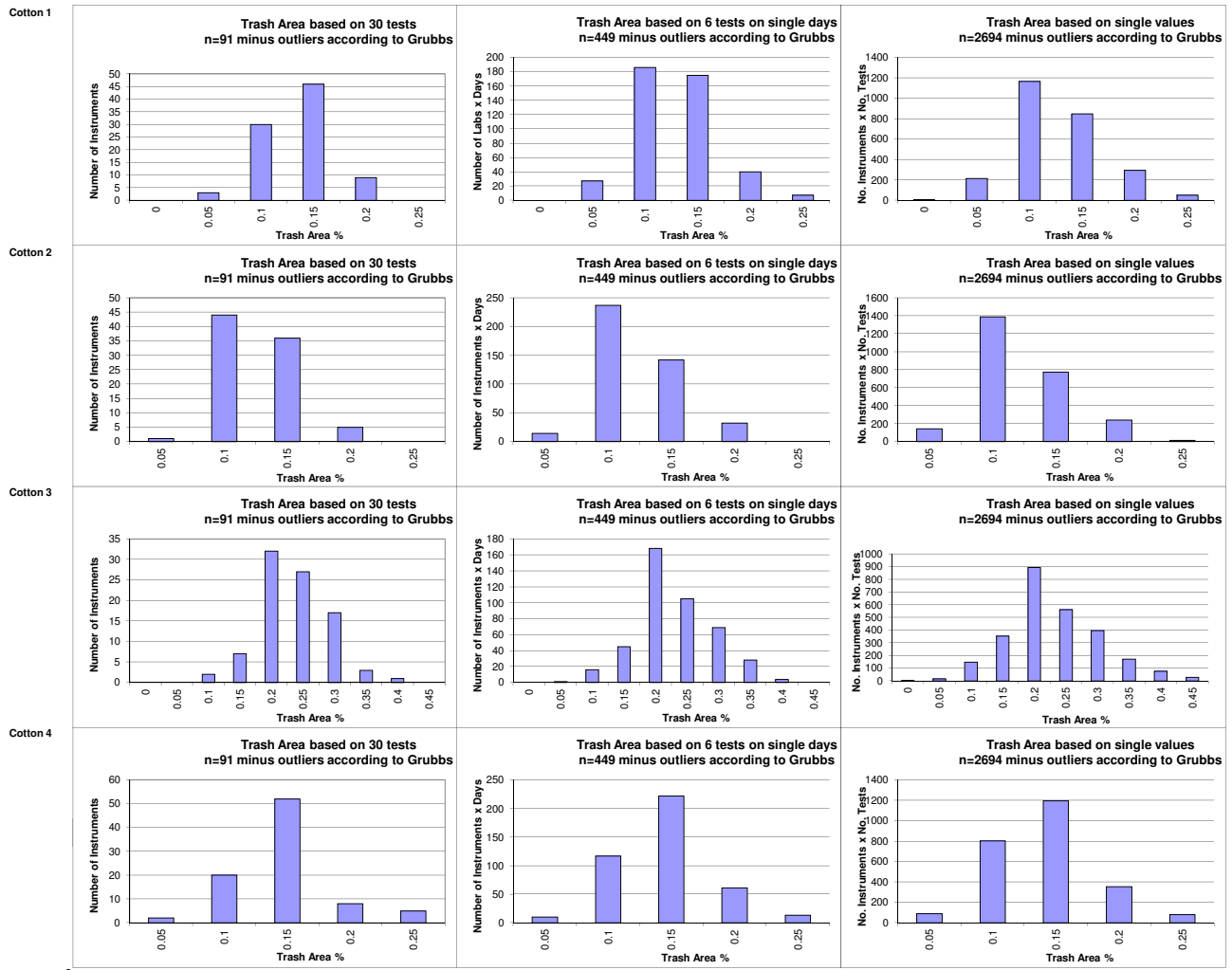
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



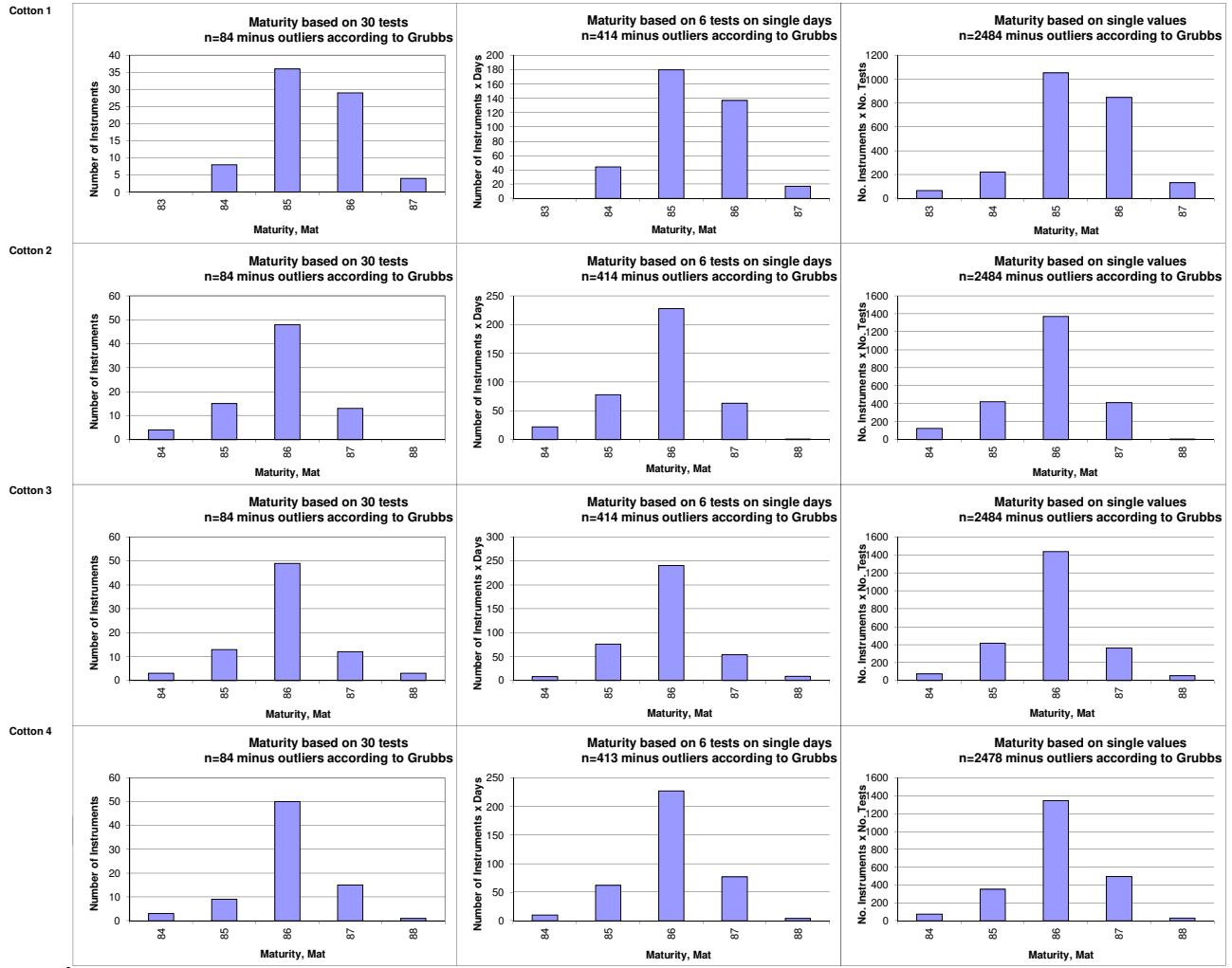
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



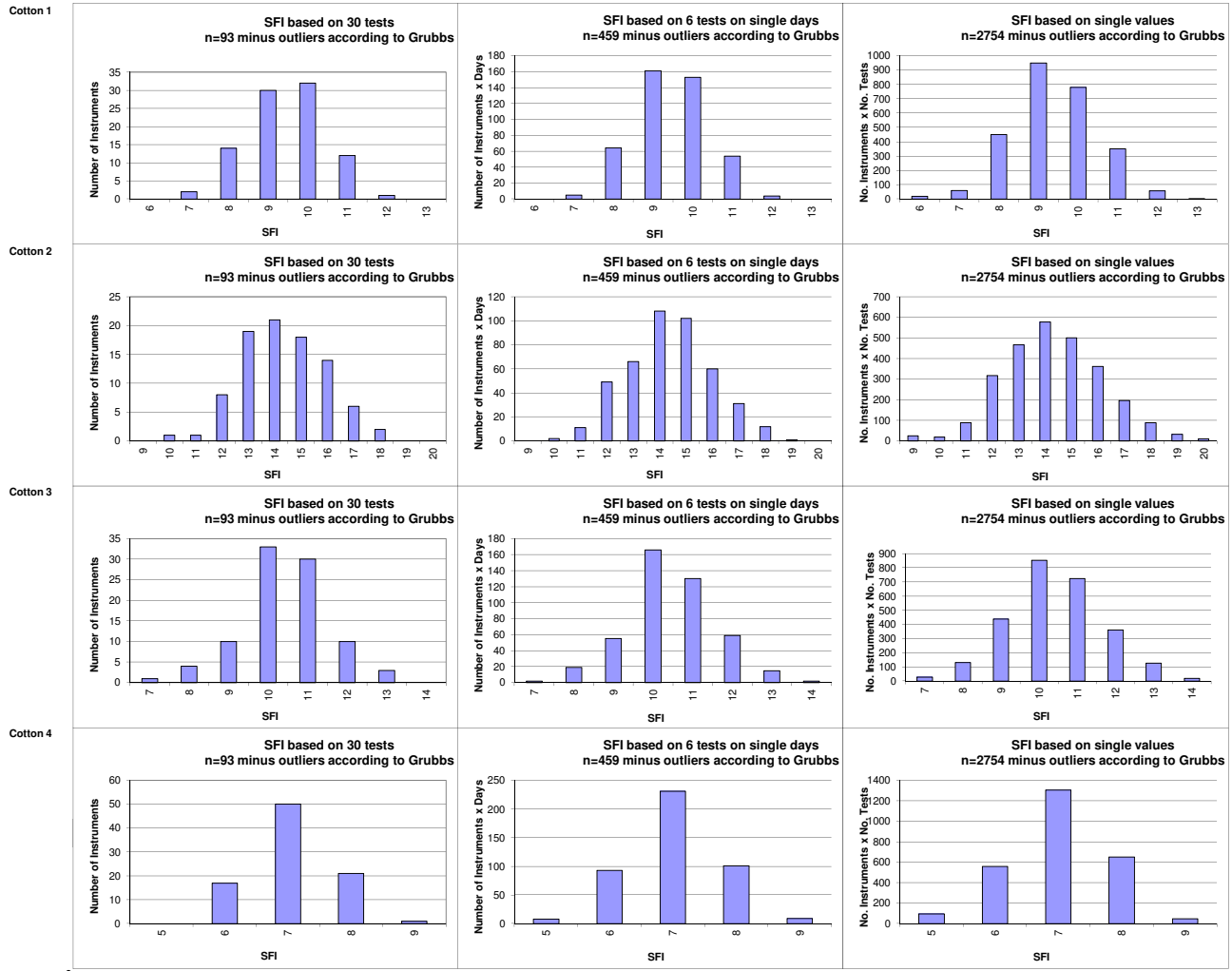
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2021 - 3 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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Faserinstitut Bremen e.V., Bremen, Germany*
USDA-AMS, Memphis, TN, USA

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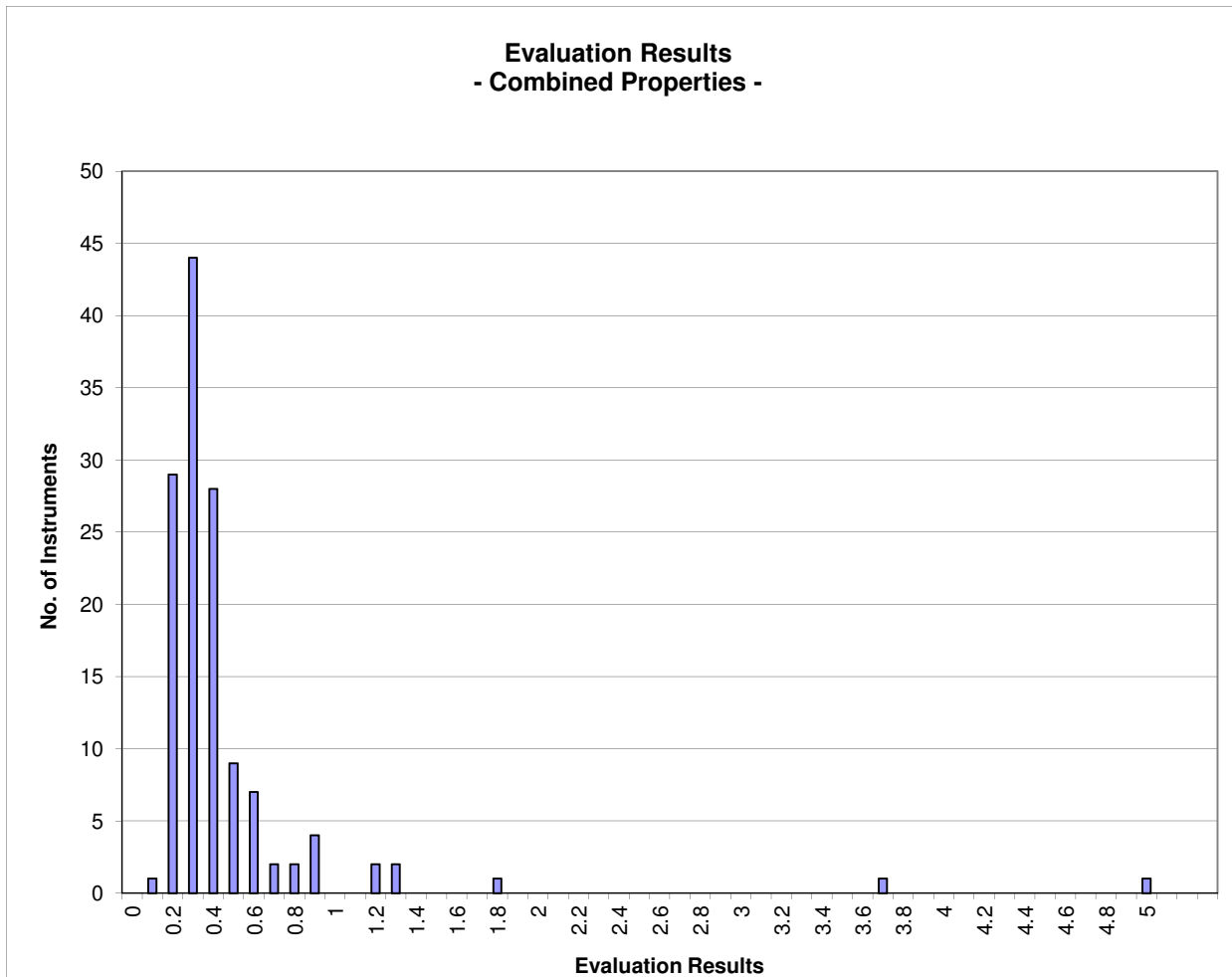
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2021 - 3

		Evaluation Combined Prop.
Statistics	Average	0.46
	Median	0.32
	Best Instrument	0.13
	Worst Instrument	4.99



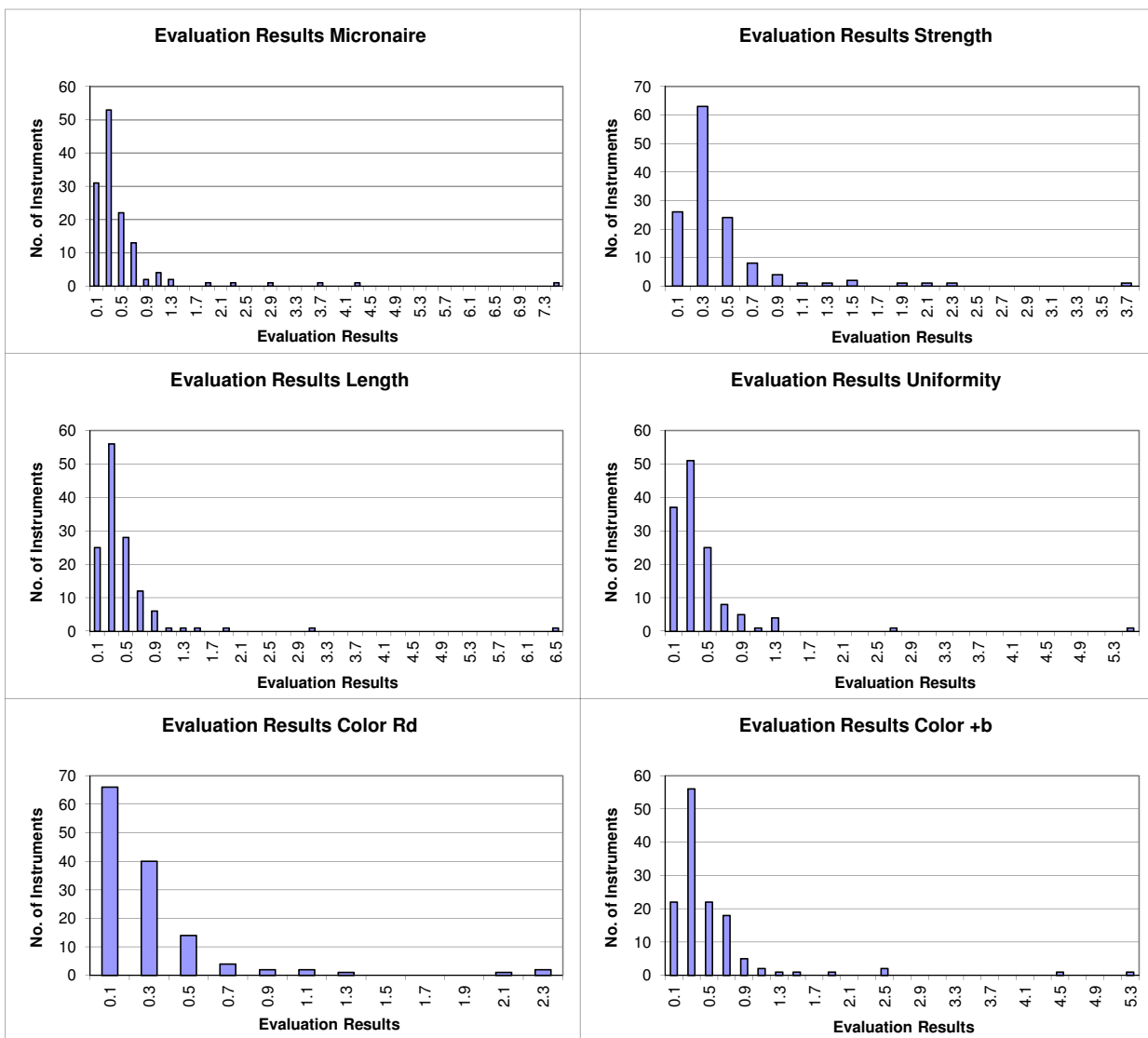
x-Axis shows midpoints of classes

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 - 3

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.52	0.44	0.46	0.42	0.31	0.52
	Median	0.30	0.30	0.34	0.32	0.20	0.35
	Best Instr.	0.03	0.05	0.06	0.04	0.02	0.02
	Worst Instr.	7.46	3.65	6.60	5.41	2.34	5.34



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	96.4	94.2	97.0	98.9	95.3	90.5
Completely within limits	95.5	86.5	94.0	97.0	92.4	77.3
% of Instruments $\geq 75\%$ within limits	95.5	94.0	97.0	98.5	93.9	93.2
% of Instruments $\geq 50\%$ within limits	96.2	97.0	97.7	100.0	95.5	95.5

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	95.7	91.4	94.4	97.0	94.5	87.6
% of Instruments 100% within limits	66.9	33.8	30.1	61.7	77.3	37.1
% of Instruments $\geq 95\%$ within limits	89.5	69.2	75.9	88.7	87.1	57.6
% of Instruments $\geq 75\%$ within limits	95.5	90.2	95.5	97.0	92.4	86.4
% of Instruments $\geq 65\%$ within limits	95.5	91.7	97.0	98.5	93.9	92.4
% of Instruments $\geq 50\%$ within limits	96.2	95.5	97.7	98.5	95.5	95.5