



International Cotton Advisory Committee



CSITC Global - Round Trial 2022 - 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 2022 - 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)			4.166	4.945	4.663	4.127	
Reference Values for Evaluation			4.166	4.945	4.663	4.127	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.061	0.085	0.075	0.075	0.074
		CV %	1.5	1.7	1.6	1.8	1.6
	based on 6 tests	SD	0.066	0.093	0.077	0.080	0.079
		CV %	1.6	1.9	1.7	1.9	1.8
	based on single tests	SD	0.073	0.099	0.085	0.088	0.086
		CV %	1.8	2.0	1.8	2.1	1.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.022	0.032	0.029	0.027	0.027
		CV %	0.5	0.6	0.6	0.6	0.6
	between single tests on one day	SD	0.032	0.035	0.035	0.034	0.034
		CV %	0.8	0.7	0.7	0.8	0.8
	between all tests on different days	SD	0.039	0.048	0.047	0.043	0.044
		CV %	0.9	1.0	1.0	1.1	1.0

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			22.436	28.157	28.225	30.965	
Reference Values for Evaluation			22.436	28.157	28.225	30.965	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.694	0.540	0.665	0.686	0.646
		CV %	3.1	1.9	2.4	2.2	2.4
	based on 6 tests	SD	0.756	0.719	0.751	0.816	0.761
		CV %	3.4	2.6	2.7	2.6	2.8
	based on single tests	SD	0.911	0.895	0.947	1.002	0.939
		CV %	4.1	3.2	3.4	3.2	3.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.298	0.411	0.379	0.382	0.367
		CV %	1.3	1.5	1.3	1.2	1.3
	between single tests on one day	SD	0.500	0.553	0.559	0.619	0.558
		CV %	2.2	2.0	2.0	2.0	2.0
	between all tests on different days	SD	0.614	0.683	0.694	0.735	0.682
		CV %	2.7	2.4	2.5	2.4	2.5

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.9405	1.1141	1.0373	1.1907	
Reference Values for Evaluation			0.9405	1.1141	1.0373	1.1907	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.0134	0.0120	0.0098	0.0106	0.0115
		CV %	1.4	1.1	0.9	0.9	1.1
	based on 6 tests	SD	0.0143	0.0128	0.0113	0.0122	0.0127
		CV %	1.5	1.2	1.1	1.0	1.2
	based on single tests	SD	0.0176	0.0159	0.0144	0.0162	0.0160
		CV %	1.9	1.4	1.4	1.4	1.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0055	0.0055	0.0056	0.0059	0.0056
		CV %	0.6	0.5	0.5	0.5	0.5
	between single tests on one day	SD	0.0101	0.0099	0.0088	0.0112	0.0100
		CV %	1.1	0.9	0.9	0.9	0.9
	between all tests on different days	SD	0.0113	0.0112	0.0106	0.0121	0.0113
		CV %	1.2	1.0	1.0	1.0	1.1

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			76.457	81.928	81.240	83.252	
Reference Values for Evaluation			76.457	81.928	81.240	83.252	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.508	0.361	0.468	0.544	0.470
		CV %	0.7	0.4	0.6	0.7	0.6
	based on 6 tests	SD	0.562	0.472	0.528	0.611	0.543
		CV %	0.7	0.6	0.7	0.7	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.759	0.678	0.672	0.782	0.723
		CV %	1.0	0.8	0.8	0.9	0.9
	between different days with each 6 tests	SD	0.249	0.262	0.223	0.257	0.248
		CV %	0.3	0.3	0.3	0.3	0.3
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.536	0.508	0.454	0.483	0.495
		CV %	0.7	0.6	0.6	0.6	0.6
	between all tests on different days	SD	0.595	0.558	0.495	0.556	0.551
		CV %	0.8	0.7	0.6	0.7	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			77.399	76.898	74.939	77.489	
Reference Values for Evaluation			77.399	76.898	74.939	77.489	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.454	0.459	0.546	0.450	0.478
		CV %	0.6	0.6	0.7	0.6	0.6
	based on 6 tests	SD	0.486	0.491	0.557	0.466	0.500
		CV %	0.6	0.6	0.7	0.6	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.513	0.516	0.592	0.504	0.531
		CV %	0.7	0.7	0.8	0.6	0.7
	between different days with each 6 tests	SD	0.151	0.141	0.160	0.165	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	0.116	0.121	0.111	0.115	0.116
		CV %	0.1	0.2	0.1	0.1	0.2
	between all tests on different days	SD	0.205	0.235	0.236	0.253	0.232
		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)			9.993	8.605	8.230	10.389	
Reference Values for Evaluation			9.993	8.605	8.230	10.389	
Number Of Instruments			129	129	129	129	129
Inter-Instrument Variation	based on 30 tests	SD	0.233	0.278	0.162	0.227	0.225
		CV %	2.3	3.2	2.0	2.2	2.4
	based on 6 tests	SD	0.242	0.309	0.191	0.231	0.243
		CV %	2.4	3.6	2.3	2.2	2.6
Typical within-instrument Variation (Median)	based on single tests	SD	0.250	0.316	0.210	0.249	0.256
		CV %	2.5	3.7	2.6	2.4	2.8
	between different days with each 6 tests	SD	0.099	0.081	0.083	0.097	0.090
		CV %	1.0	0.9	1.0	0.9	1.0
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.050	0.056	0.054	0.056	0.054
		CV %	0.5	0.6	0.7	0.5	0.6
	between all tests on different days	SD	0.116	0.114	0.111	0.127	0.117
		CV %	1.2	1.3	1.3	1.2	1.3

Optional Parameters

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

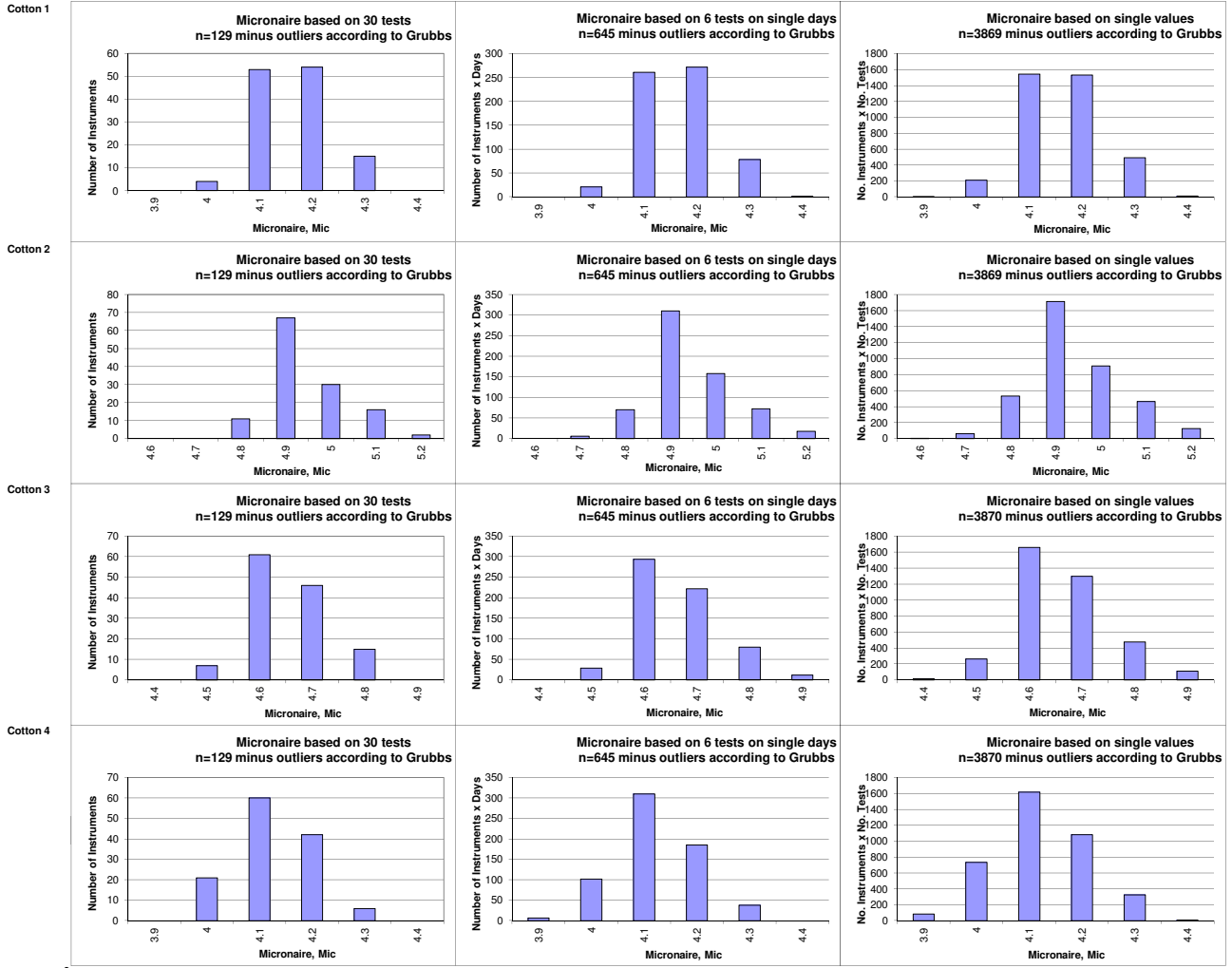
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			26.07	16.41	23.64	29.22	
Reference Values for Evaluation			26.07	16.41	23.64	29.22	
Number Of Instruments			85	85	85	85	85
Inter-Instrument Variation	based on 30 tests	SD	4.75	2.59	2.77	3.98	3.53
		CV %	18.2	15.8	11.7	13.6	14.8
	based on 6 tests	SD	5.89	3.51	4.50	4.70	4.65
		CV %	22.6	21.4	19.0	16.1	19.8
	based on single tests	SD	6.54	4.14	5.16	6.22	5.52
		CV %	25.1	25.2	21.8	21.3	23.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	2.42	1.73	2.37	2.71	2.31
		CV %	9.3	10.6	10.0	9.3	9.8
	between single tests on one day	SD	2.34	2.10	1.89	2.73	2.27
		CV %	9.0	12.8	8.0	9.4	9.8
	between all tests on different days	SD	3.87	2.97	3.73	4.21	3.69
		CV %	14.8	18.1	15.8	14.4	15.8

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.194	0.176	0.245	0.290	
Reference Values for Evaluation			0.194	0.176	0.245	0.290	
Number Of Instruments			85	85	85	85	85
Inter-Instrument Variation	based on 30 tests	SD	0.038	0.033	0.046	0.054	0.043
		CV %	19.4	18.7	18.8	18.7	18.9
	based on 6 tests	SD	0.043	0.042	0.059	0.072	0.054
		CV %	22.1	24.1	24.1	24.7	23.8
	based on single tests	SD	0.049	0.051	0.073	0.089	0.065
		CV %	25.6	28.8	29.7	30.6	28.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.020	0.028	0.040	0.038	0.032
		CV %	10.4	16.0	16.4	13.0	13.9
	between single tests on one day	SD	0.017	0.029	0.033	0.044	0.031
		CV %	8.9	16.5	13.5	15.2	13.5
	between all tests on different days	SD	0.031	0.042	0.061	0.062	0.049
		CV %	16.2	23.9	24.9	21.4	21.6

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.40	87.01	87.44	85.67	
Reference Values for Evaluation			85.40	87.01	87.44	85.67	
Number Of Instruments			83	83	83	83	83
Inter-Instrument Variation	based on 30 tests	SD	0.74	0.77	0.66	0.69	0.72
		CV %	0.9	0.9	0.8	0.8	0.8
	based on 6 tests	SD	0.75	0.80	0.69	0.68	0.73
		CV %	0.9	0.9	0.8	0.8	0.8
	based on single tests	SD	0.83	0.84	0.80	0.69	0.79
		CV %	1.0	1.0	0.9	0.8	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.13	0.15	0.11	0.14	0.13
		CV %	0.2	0.2	0.1	0.2	0.2
	between single tests on one day	SD	0.16	0.20	0.12	0.14	0.16
		CV %	0.2	0.2	0.1	0.2	0.2
	between all tests on different days	SD	0.25	0.31	0.18	0.24	0.24
		CV %	0.3	0.4	0.2	0.3	0.3

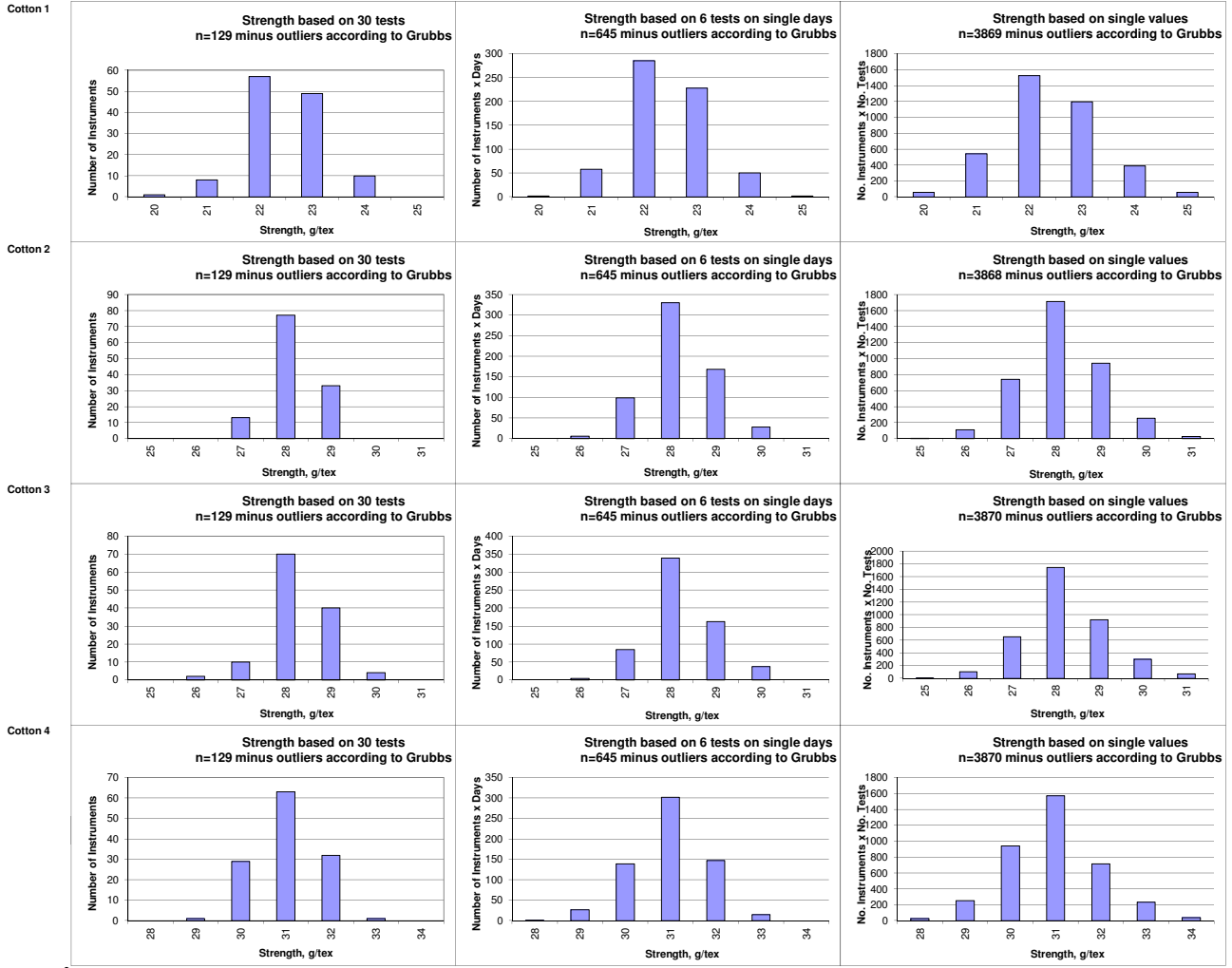
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			19.20	9.30	9.85	7.50	
Reference Values for Evaluation			19.20	9.30	9.85	7.50	
Number Of Instruments			91	91	91	91	91
Inter-Instrument Variation	based on 30 tests	SD	3.24	0.92	1.07	0.81	1.51
		CV %	16.9	9.9	10.9	10.8	12.1
	based on 6 tests	SD	3.19	0.99	1.13	0.88	1.55
		CV %	16.6	10.7	11.5	11.7	12.6
	based on single tests	SD	3.38	1.15	1.27	0.95	1.69
		CV %	17.6	12.3	12.9	12.7	13.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.59	0.29	0.31	0.22	0.35
		CV %	3.1	3.1	3.1	2.9	3.1
	between single tests on one day	SD	1.01	0.52	0.57	0.41	0.63
		CV %	5.2	5.6	5.8	5.4	5.5
	between all tests on different days	SD	1.22	0.62	0.63	0.45	0.73
		CV %	6.3	6.6	6.4	6.0	6.3

Test Result Distributions
Micronaire



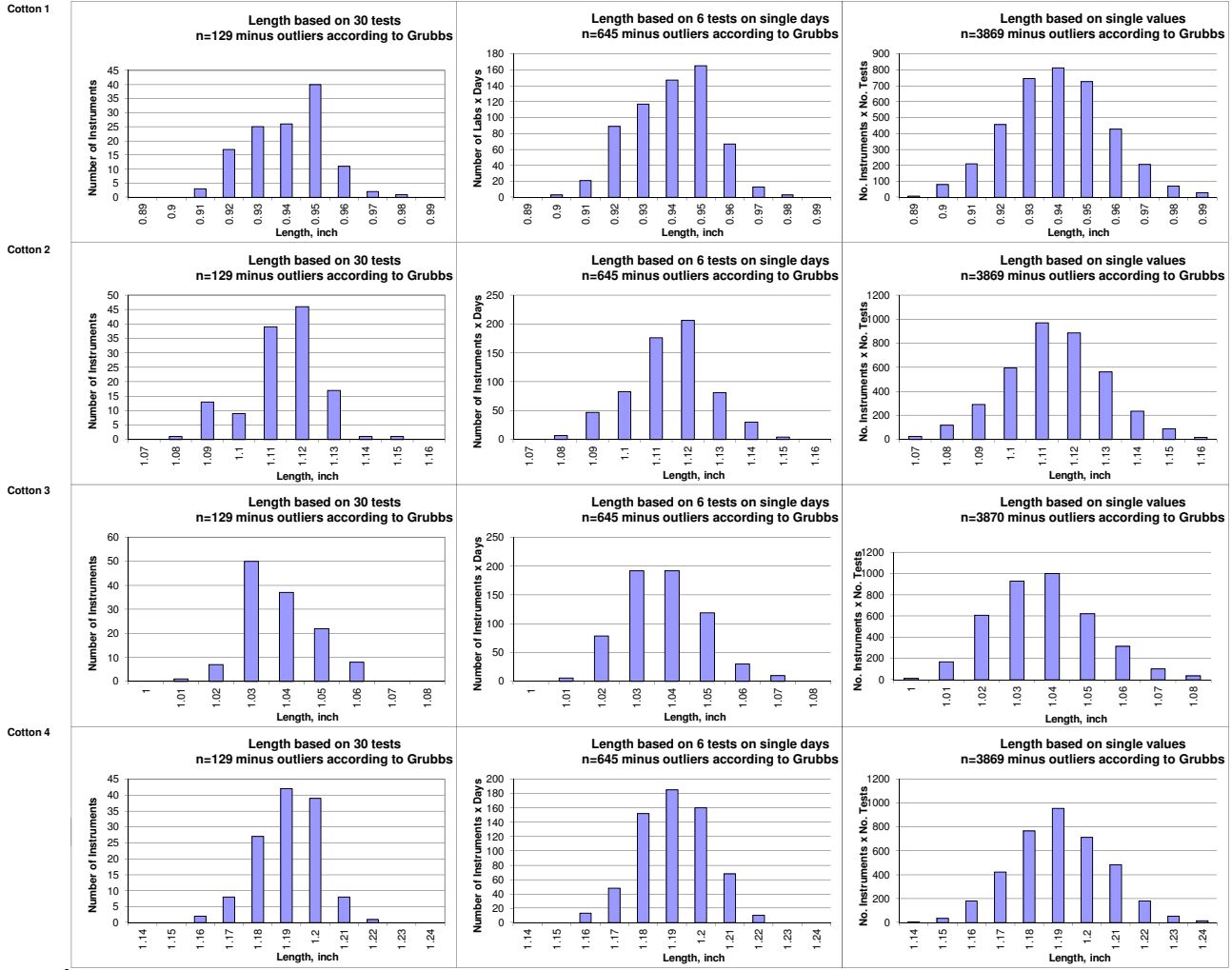
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



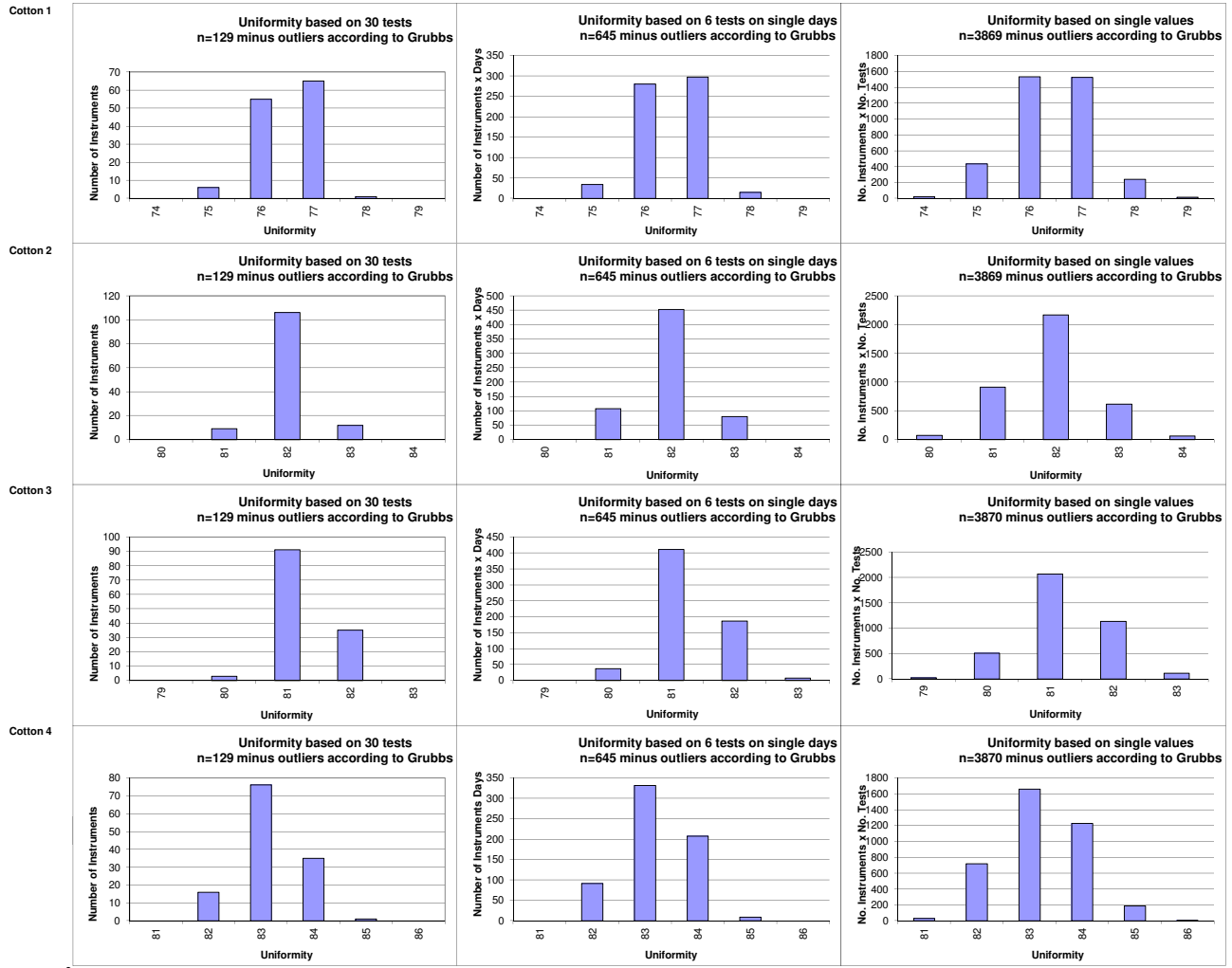
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



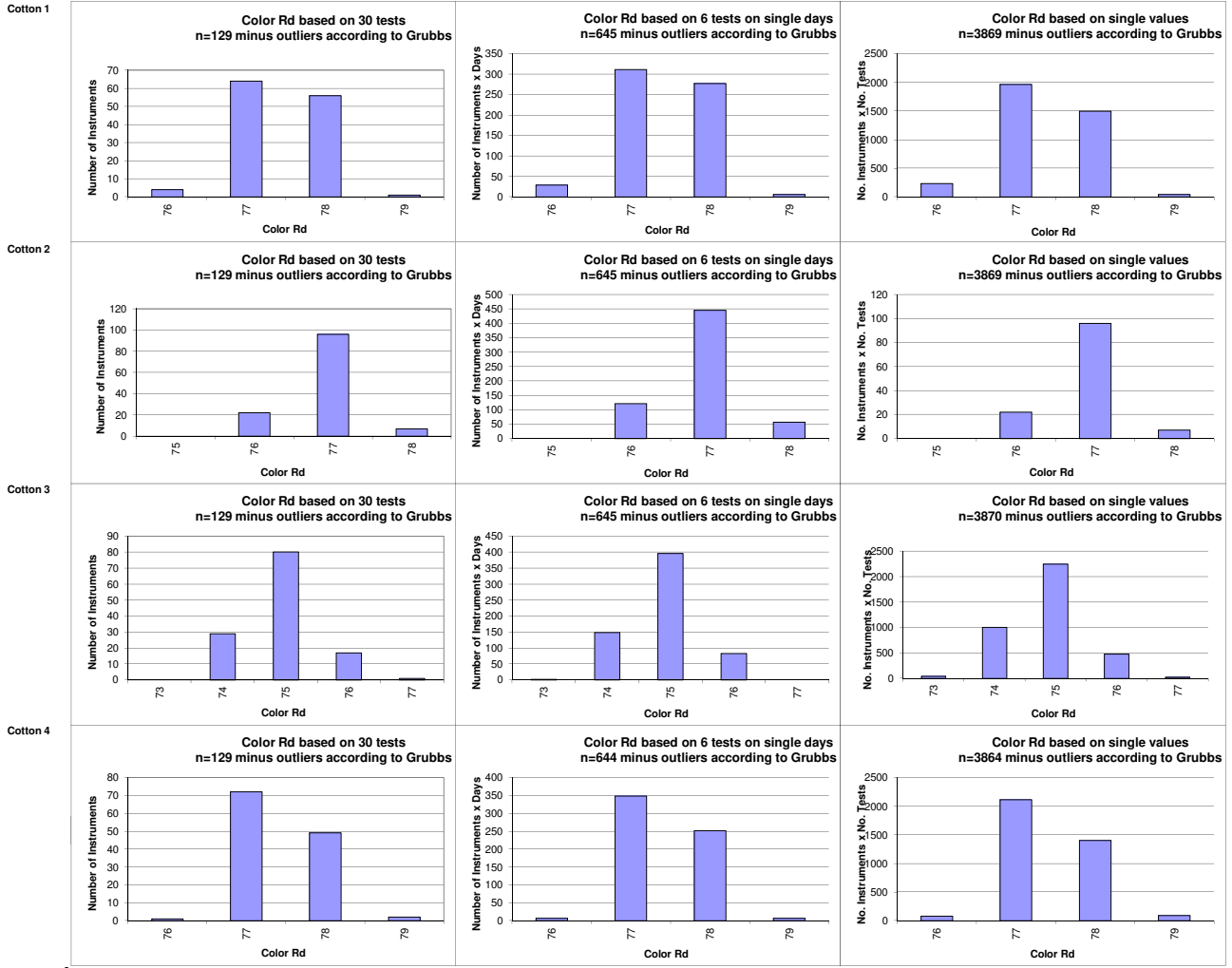
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



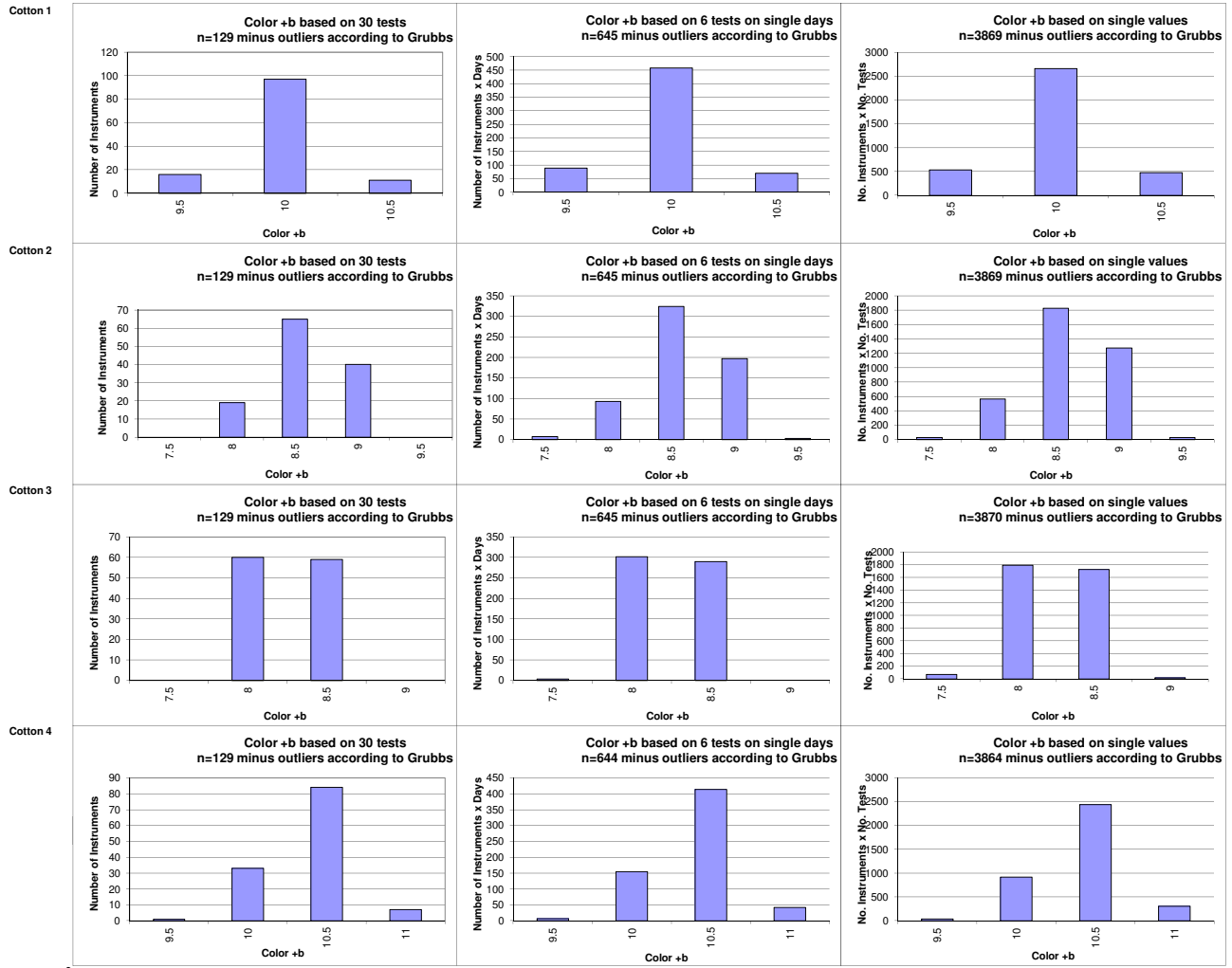
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



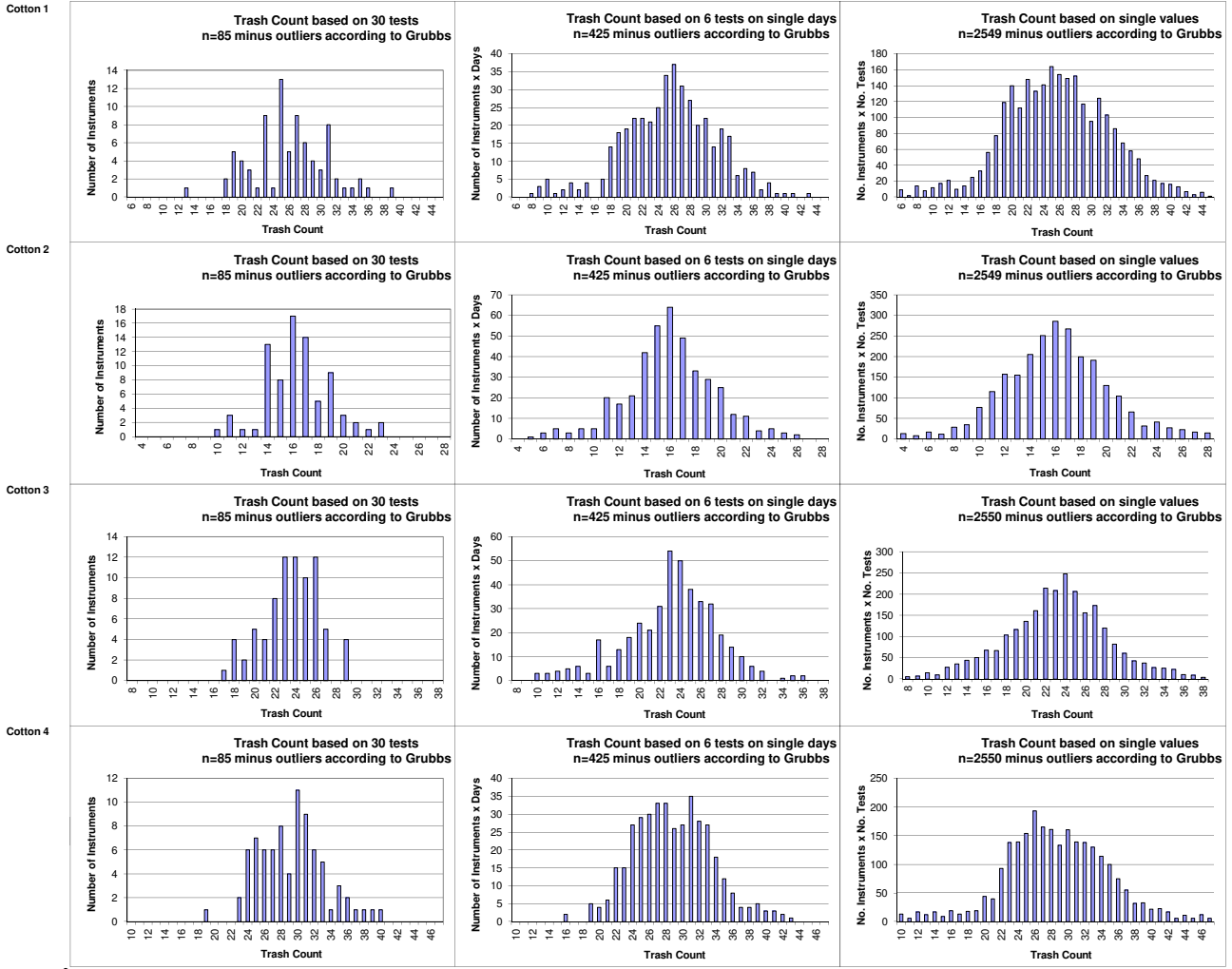
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



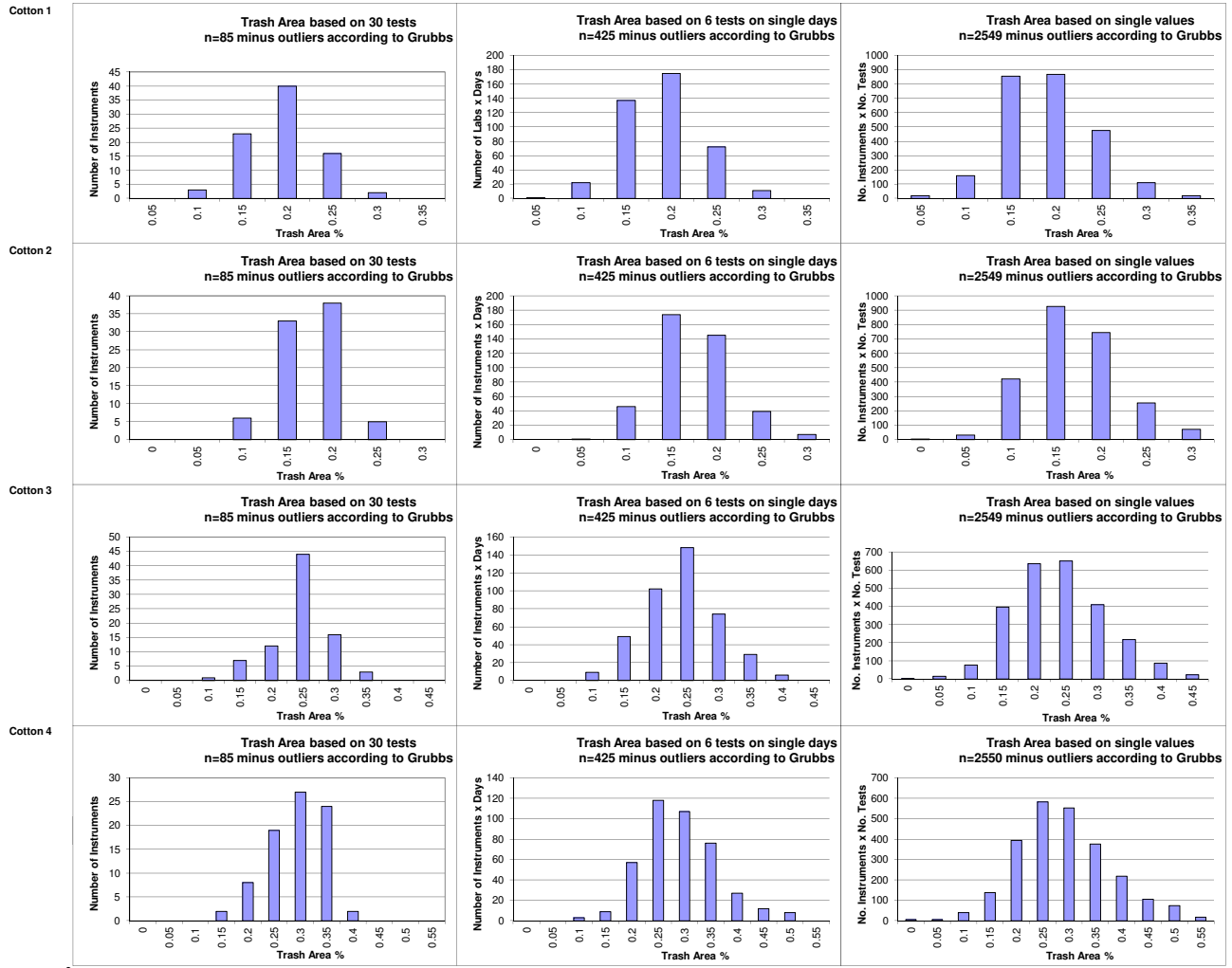
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



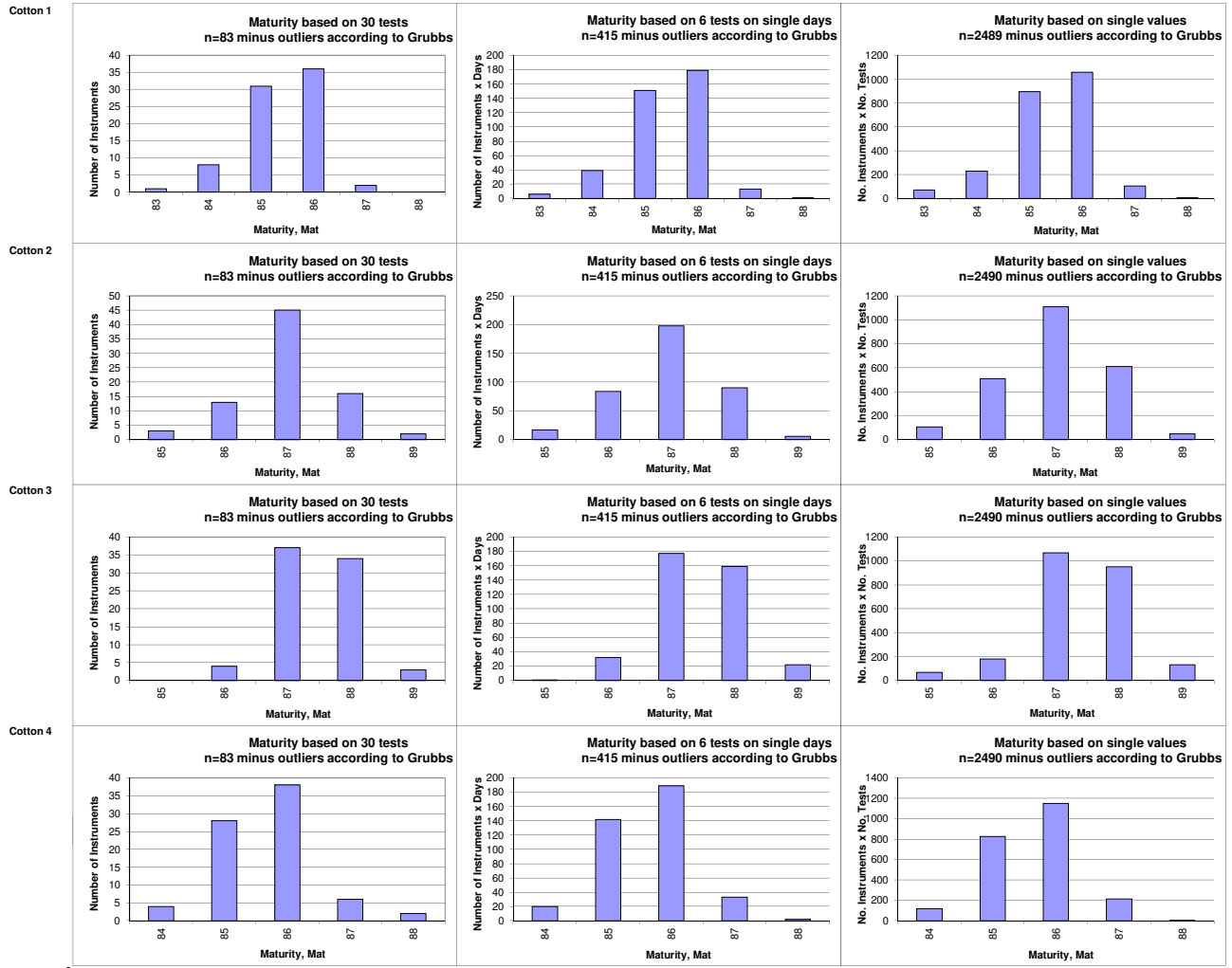
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



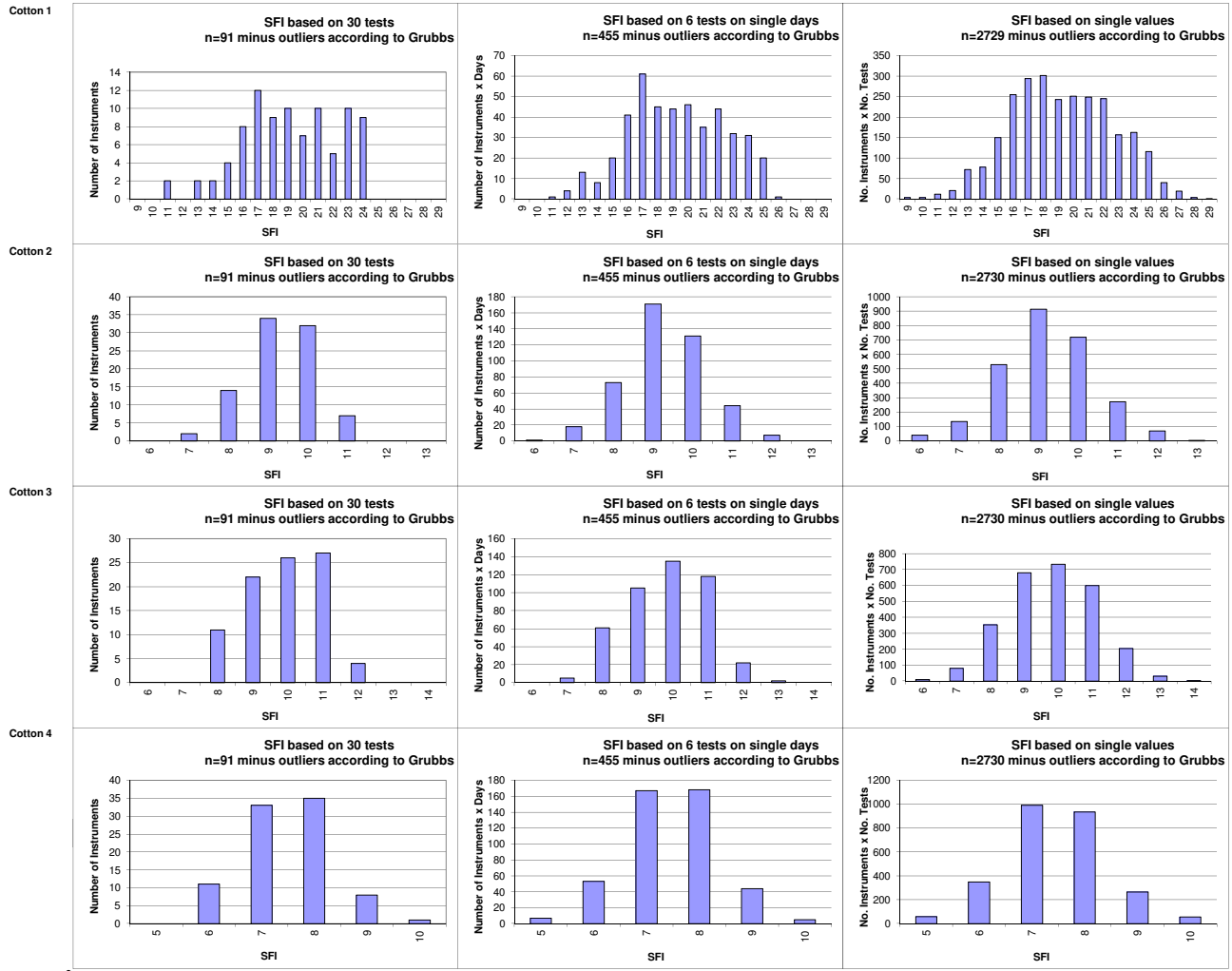
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2022 - 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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Faserinstitut Bremen e.V., Bremen, Germany*
USDA-AMS, Memphis, TN, USA

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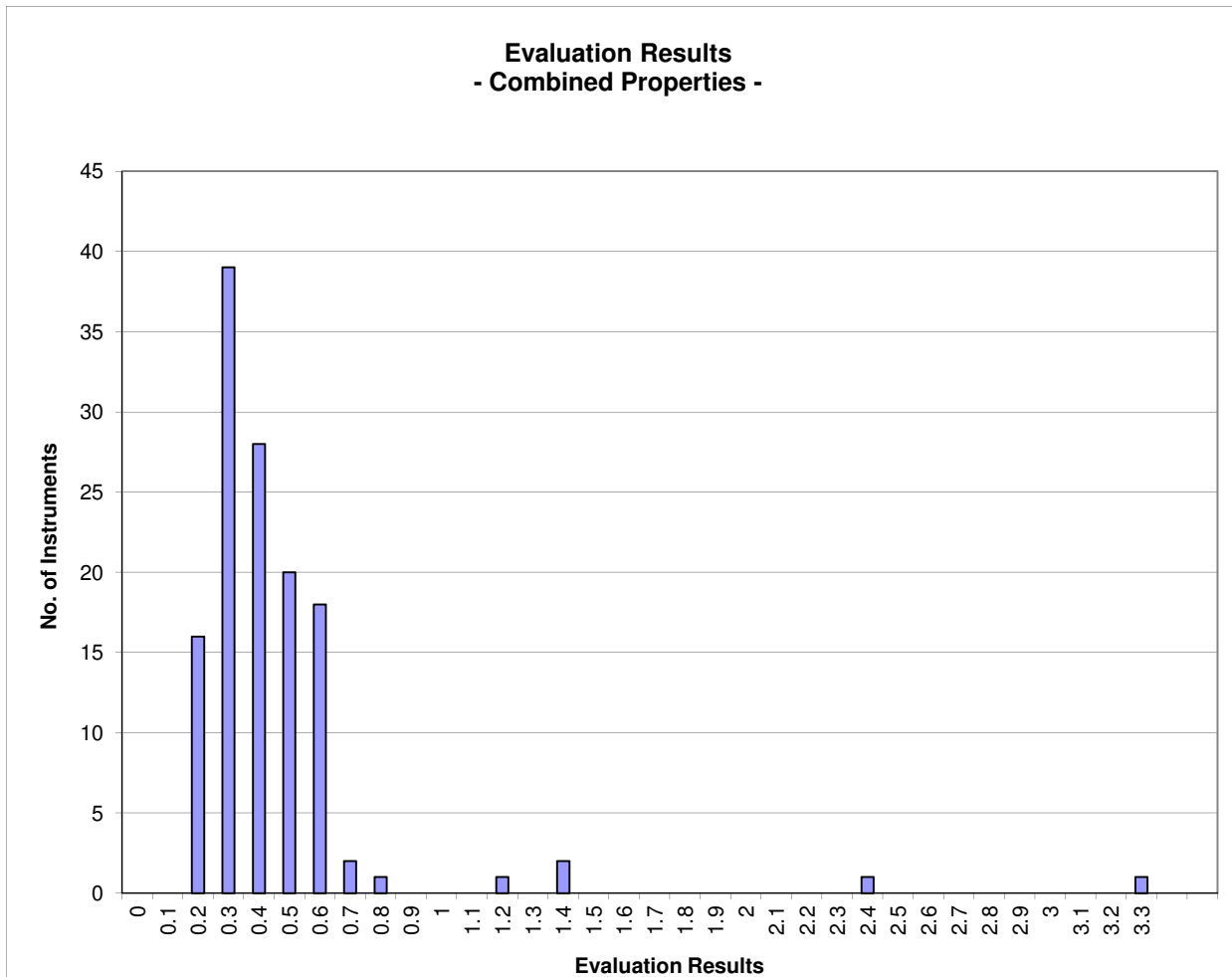
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2022 - 4

		Evaluation Combined Prop.
Statistics	Average	0.46
	Median	0.38
	Best Instrument	0.17
	Worst Instrument	3.28



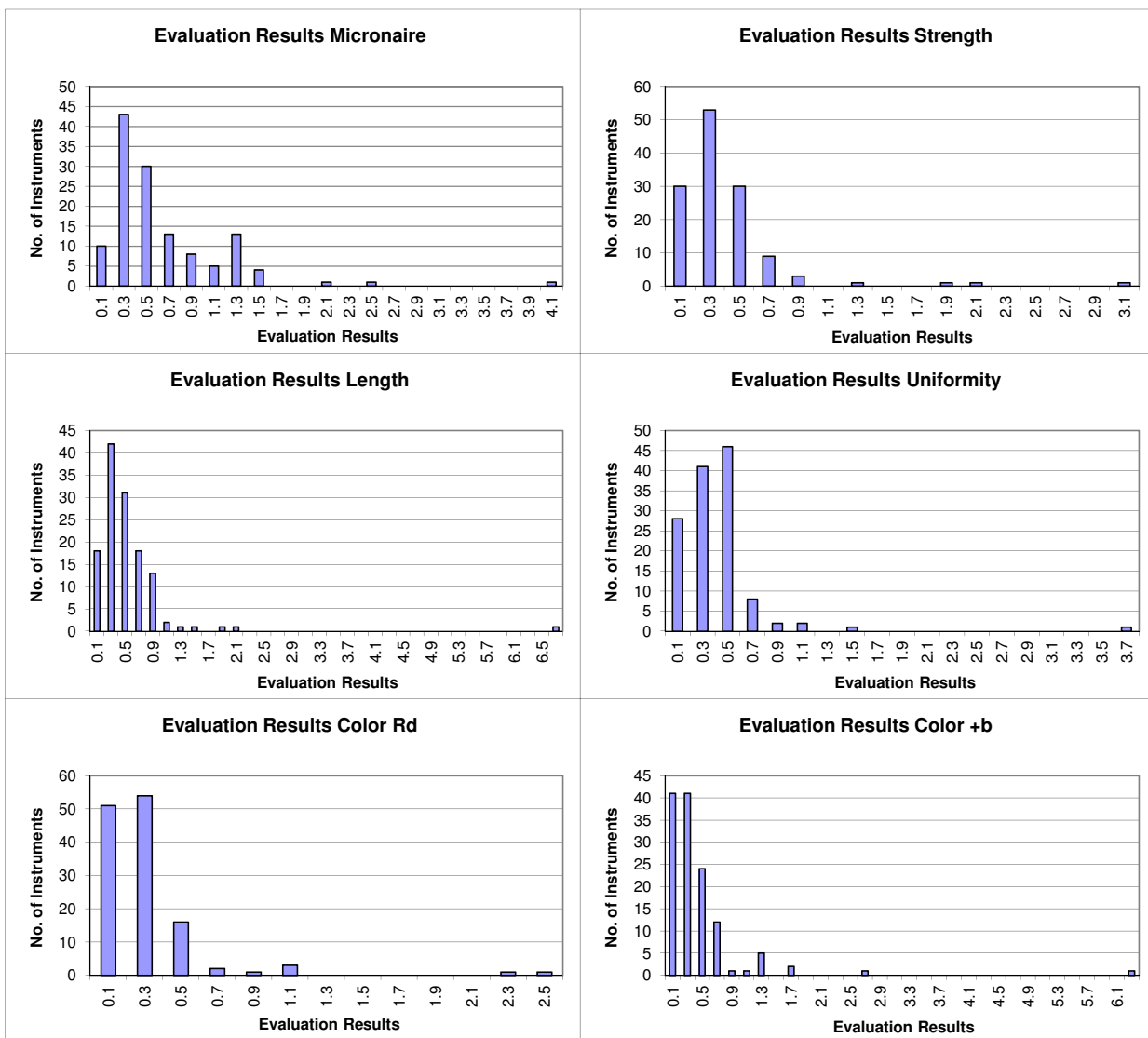
x-Axis shows midpoints of classes

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 - 4

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.64	0.41	0.54	0.40	0.30	0.45
	Median	0.45	0.34	0.42	0.36	0.23	0.31
	Best Instr.	0.07	0.04	0.05	0.05	0.05	0.04
	Worst Instr.	4.08	3.18	6.60	3.64	2.45	6.31



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



International Cotton Advisory Committee



CSITC Global - Round Trial 2022 - 4 General Evaluation

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Section Two: Instrument Evaluation
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	98.4	97.3	96.9	99.4	96.9	89.5
Completely within limits	96.1	94.6	93.8	98.4	95.3	77.5
% of Instruments $\geq 75\%$ within limits	97.7	97.7	96.1	99.2	96.9	91.5
% of Instruments $\geq 50\%$ within limits	100.0	97.7	97.7	100.0	97.7	94.6

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	96.5	93.7	94.9	98.0	96.0	88.2
% of Instruments 100% within limits	54.3	29.5	31.0	57.4	76.0	42.6
% of Instruments $\geq 95\%$ within limits	81.4	64.3	72.9	92.2	87.6	63.6
% of Instruments $\geq 75\%$ within limits	96.9	95.3	96.1	97.7	95.3	86.8
% of Instruments $\geq 65\%$ within limits	97.7	96.9	96.1	99.2	96.9	89.9
% of Instruments $\geq 50\%$ within limits	98.4	97.7	98.4	99.2	96.9	92.2