



International Cotton Advisory Committee



CSITC Global - Round Trial 2024 - 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 and the European Union, partners in Commodity Development.



* Faserinstitut Bremen are a Cooperation Partner with ICA Bremen

Global - Round Trial 2024 - 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)			4.667	4.537	4.159	4.390	
Reference Values for Evaluation			4.667	4.537	4.159	4.390	
Number Of Instruments			173	173	173	173	173
Inter-Instrument Variation	based on 30 tests	SD	0.064	0.048	0.054	0.059	0.056
		CV %	1.4	1.0	1.3	1.3	1.3
	based on 6 tests	SD	0.065	0.054	0.059	0.065	0.061
		CV %	1.4	1.2	1.4	1.5	1.4
	based on single tests	SD	0.073	0.061	0.067	0.071	0.068
		CV %	1.6	1.3	1.6	1.6	1.5
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.019	0.017	0.019	0.017	0.018
		CV %	0.4	0.4	0.4	0.4	0.4
	between single tests on one day	SD	0.031	0.032	0.031	0.031	0.032
		CV %	0.7	0.7	0.8	0.7	0.7
	between all tests on different days	SD	0.037	0.037	0.037	0.037	0.037
		CV %	0.8	0.8	0.9	0.8	0.8

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			31.771	25.189	28.754	28.886	
Reference Values for Evaluation			31.771	25.189	28.754	28.886	
Number Of Instruments			173	173	173	173	173
Inter-Instrument Variation	based on 30 tests	SD	0.758	0.561	0.610	0.595	0.631
		CV %	2.4	2.2	2.1	2.1	2.2
	based on 6 tests	SD	0.808	0.682	0.686	0.675	0.713
		CV %	2.5	2.7	2.4	2.3	2.5
	based on single tests	SD	0.940	0.831	0.838	0.821	0.857
		CV %	3.0	3.3	2.9	2.8	3.0
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.258	0.201	0.229	0.262	0.237
		CV %	0.8	0.8	0.8	0.9	0.8
	between single tests on one day	SD	0.492	0.429	0.507	0.471	0.475
		CV %	1.5	1.7	1.8	1.6	1.7
	between all tests on different days	SD	0.570	0.478	0.555	0.574	0.544
		CV %	1.8	1.9	1.9	2.0	1.9

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.1913	1.0135	1.0774	1.1317	
Reference Values for Evaluation			1.1913	1.0135	1.0774	1.1317	
Number Of Instruments			173	173	173	173	173
Inter-Instrument Variation	based on 30 tests	SD	0.0100	0.0153	0.0096	0.0096	0.0111
		CV %	0.8	1.5	0.9	0.8	1.0
	based on 6 tests	SD	0.0108	0.0163	0.0105	0.0104	0.0120
		CV %	0.9	1.6	1.0	0.9	1.1
	based on single tests	SD	0.0141	0.0186	0.0138	0.0134	0.0150
		CV %	1.2	1.8	1.3	1.2	1.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0042	0.0045	0.0044	0.0041	0.0043
		CV %	0.4	0.4	0.4	0.4	0.4
	between single tests on one day	SD	0.0092	0.0095	0.0092	0.0089	0.0092
		CV %	0.8	0.9	0.9	0.8	0.8
	between all tests on different days	SD	0.0102	0.0105	0.0102	0.0096	0.0101
		CV %	0.9	1.0	0.9	0.8	0.9

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			83.476	79.271	80.014	83.095	
Reference Values for Evaluation			83.476	79.271	80.014	83.095	
Number Of Instruments			173	173	173	173	173
Inter-Instrument Variation	based on 30 tests	SD	0.293	0.496	0.410	0.408	0.402
		CV %	0.4	0.6	0.5	0.5	0.5
	based on 6 tests	SD	0.363	0.564	0.474	0.457	0.465
		CV %	0.4	0.7	0.6	0.6	0.6
Typical within-instrument Variation (Median)	based on single tests	SD	0.528	0.710	0.660	0.629	0.632
		CV %	0.6	0.9	0.8	0.8	0.8
	between different days with each 6 tests	SD	0.163	0.201	0.204	0.199	0.192
		CV %	0.2	0.3	0.3	0.2	0.2
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.416	0.481	0.486	0.433	0.454
		CV %	0.5	0.6	0.6	0.5	0.6
	between all tests on different days	SD	0.455	0.556	0.542	0.479	0.508
		CV %	0.5	0.7	0.7	0.6	0.6

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			74.062	75.721	75.770	79.534	
Reference Values for Evaluation			74.062	75.721	75.770	79.534	
Number Of Instruments			170	170	170	170	170
Inter-Instrument Variation	based on 30 tests	SD	0.498	0.487	0.436	0.525	0.486
		CV %	0.7	0.6	0.6	0.7	0.6
	based on 6 tests	SD	0.547	0.515	0.472	0.546	0.520
		CV %	0.7	0.7	0.6	0.7	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.562	0.530	0.489	0.550	0.533
		CV %	0.8	0.7	0.6	0.7	0.7
	between different days with each 6 tests	SD	0.125	0.093	0.104	0.110	0.108
		CV %	0.2	0.1	0.1	0.1	0.1
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.084	0.083	0.080	0.090	0.084
		CV %	0.1	0.1	0.1	0.1	0.1
	between all tests on different days	SD	0.175	0.155	0.145	0.161	0.159
		CV %	0.2	0.2	0.2	0.2	0.2

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			14.864	14.917	10.271	9.326	
Reference Values for Evaluation			14.864	14.917	10.271	9.326	
Number Of Instruments			169	169	170	170	170
Inter-Instrument Variation	based on 30 tests	SD	0.297	0.267	0.195	0.242	0.250
		CV %	2.0	1.8	1.9	2.6	2.1
	based on 6 tests	SD	0.309	0.255	0.206	0.256	0.256
		CV %	2.1	1.7	2.0	2.7	2.1
Typical within-instrument Variation (Median)	based on single tests	SD	0.312	0.264	0.208	0.264	0.262
		CV %	2.1	1.8	2.0	2.8	2.2
	between different days with each 6 tests	SD	0.085	0.082	0.055	0.075	0.074
		CV %	0.6	0.5	0.5	0.8	0.6
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.053	0.042	0.037	0.035	0.042
		CV %	0.4	0.3	0.4	0.4	0.3
	between all tests on different days	SD	0.120	0.097	0.080	0.101	0.100
		CV %	0.8	0.7	0.8	1.1	0.8

Optional Parameters

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

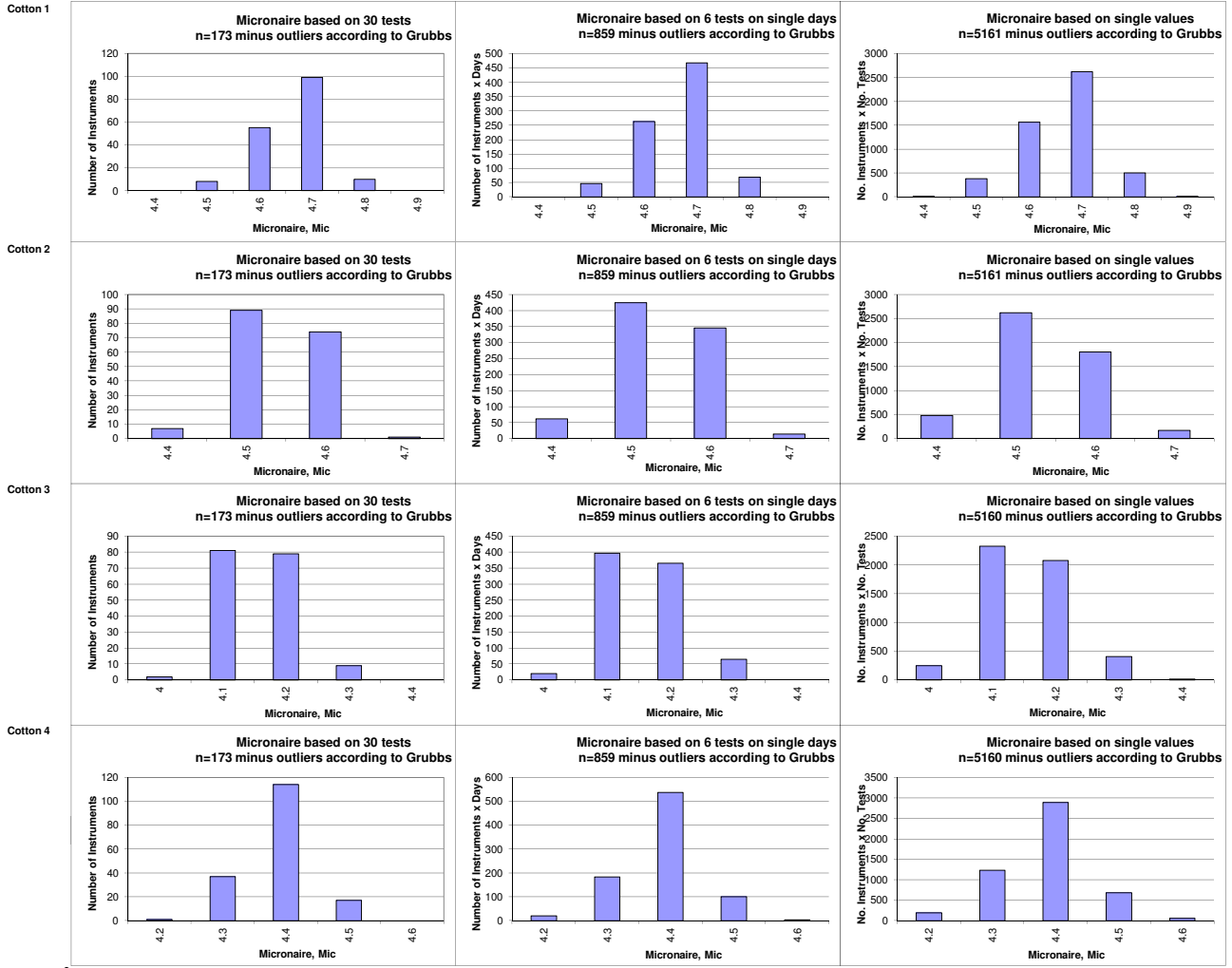
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			14.24	11.93	32.56	23.84	
Reference Values for Evaluation			14.24	11.93	32.56	23.84	
Number Of Instruments			103	103	103	103	103
Inter-Instrument Variation	based on 30 tests	SD	2.52	2.74	6.32	4.54	4.03
		CV %	17.7	22.9	19.4	19.1	19.8
	based on 6 tests	SD	2.75	3.07	6.82	5.41	4.51
		CV %	19.3	25.8	20.9	22.7	22.2
	based on single tests	SD	3.42	3.59	8.31	6.14	5.36
		CV %	24.0	30.1	25.5	25.8	26.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.10	1.08	2.04	1.66	1.47
		CV %	7.7	9.1	6.3	7.0	7.5
	between single tests on one day	SD	1.22	1.24	1.90	1.41	1.44
		CV %	8.5	10.4	5.8	5.9	7.7
	between all tests on different days	SD	2.05	1.91	3.34	3.19	2.62
		CV %	14.4	16.0	10.3	13.4	13.5

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.129	0.109	0.309	0.225	
Reference Values for Evaluation			0.129	0.109	0.309	0.225	
Number Of Instruments			103	103	103	103	103
Inter-Instrument Variation	based on 30 tests	SD	0.023	0.024	0.077	0.046	0.043
		CV %	18.2	22.3	24.9	20.6	21.5
	based on 6 tests	SD	0.031	0.027	0.082	0.053	0.048
		CV %	24.1	24.6	26.4	23.6	24.7
	based on single tests	SD	0.035	0.029	0.092	0.061	0.054
		CV %	26.8	26.8	29.8	27.4	27.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.014	0.013	0.029	0.027	0.021
		CV %	11.1	12.2	9.3	12.2	11.2
	between single tests on one day	SD	0.011	0.010	0.025	0.020	0.017
		CV %	8.9	8.7	8.2	8.9	8.7
	between all tests on different days	SD	0.024	0.019	0.048	0.038	0.032
		CV %	18.4	17.2	15.6	16.9	17.0

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			87.03	86.21	86.28	86.36	
Reference Values for Evaluation			87.03	86.21	86.28	86.36	
Number Of Instruments			102	102	102	102	102
Inter-Instrument Variation	based on 30 tests	SD	0.62	0.64	0.62	0.65	0.63
		CV %	0.7	0.7	0.7	0.7	0.7
	based on 6 tests	SD	0.64	0.66	0.63	0.67	0.65
		CV %	0.7	0.8	0.7	0.8	0.7
	based on single tests	SD	0.69	0.69	0.65	0.70	0.69
		CV %	0.8	0.8	0.8	0.8	0.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.07	0.09	0.09	0.09	0.09
		CV %	0.1	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.12	0.14	0.14	0.11	0.13
		CV %	0.1	0.2	0.2	0.1	0.1
	between all tests on different days	SD	0.18	0.18	0.18	0.18	0.18
		CV %	0.2	0.2	0.2	0.2	0.2

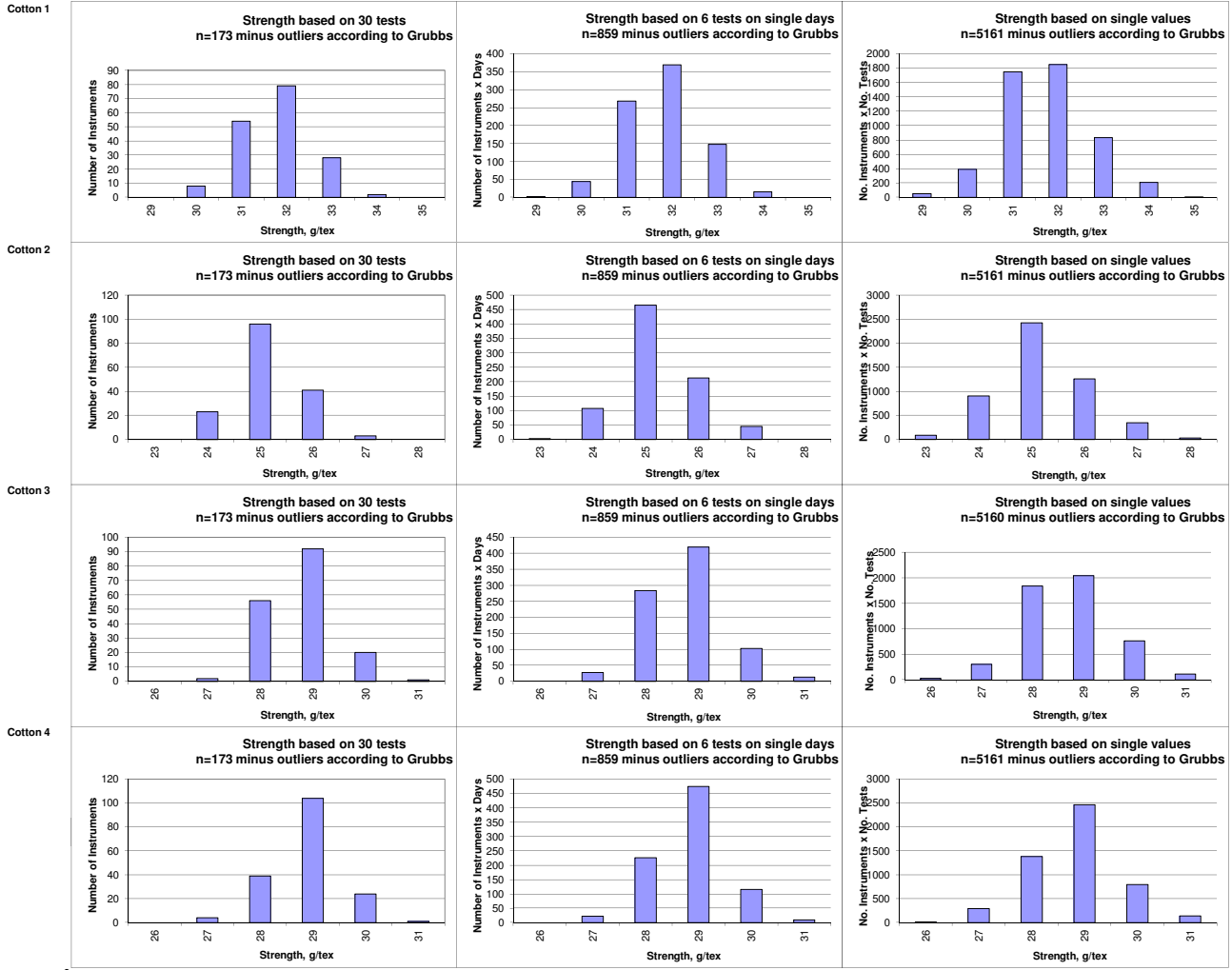
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			7.45	13.84	11.82	8.58	
Reference Values for Evaluation			7.45	13.84	11.82	8.58	
Number Of Instruments			111	110	111	111	111
Inter-Instrument Variation	based on 30 tests	SD	0.64	1.16	1.00	0.54	0.83
		CV %	8.6	8.3	8.4	6.3	7.9
	based on 6 tests	SD	0.71	1.24	1.03	0.66	0.91
		CV %	9.5	9.0	8.7	7.7	8.7
	based on single tests	SD	0.78	1.47	1.19	0.84	1.07
		CV %	10.5	10.6	10.1	9.8	10.2
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.17	0.42	0.34	0.23	0.29
		CV %	2.3	3.0	2.9	2.7	2.7
	between single tests on one day	SD	0.33	0.81	0.63	0.48	0.56
		CV %	4.4	5.8	5.4	5.6	5.3
	between all tests on different days	SD	0.36	0.91	0.71	0.53	0.63
		CV %	4.8	6.6	6.0	6.2	5.9

Test Result Distributions
Micronaire



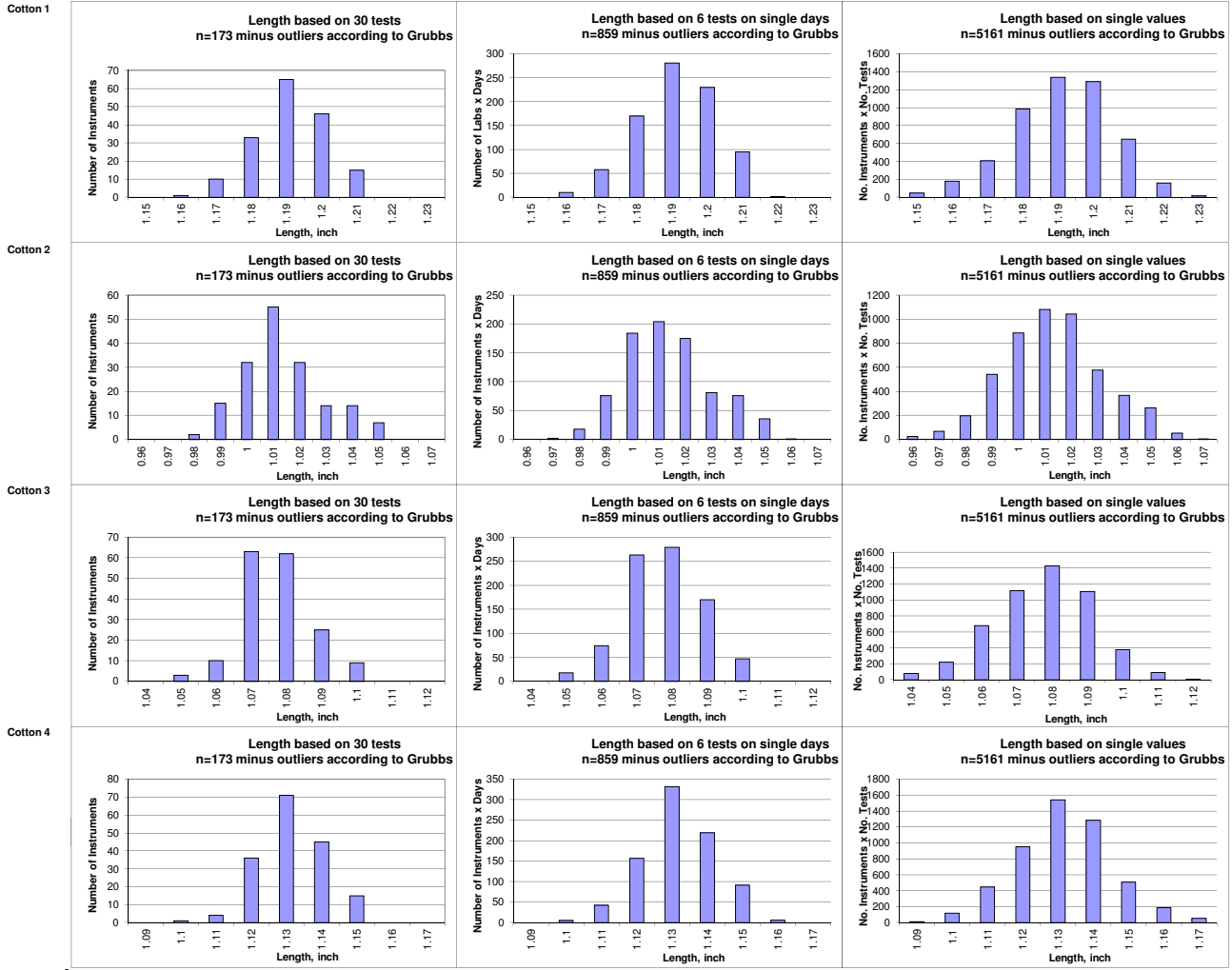
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



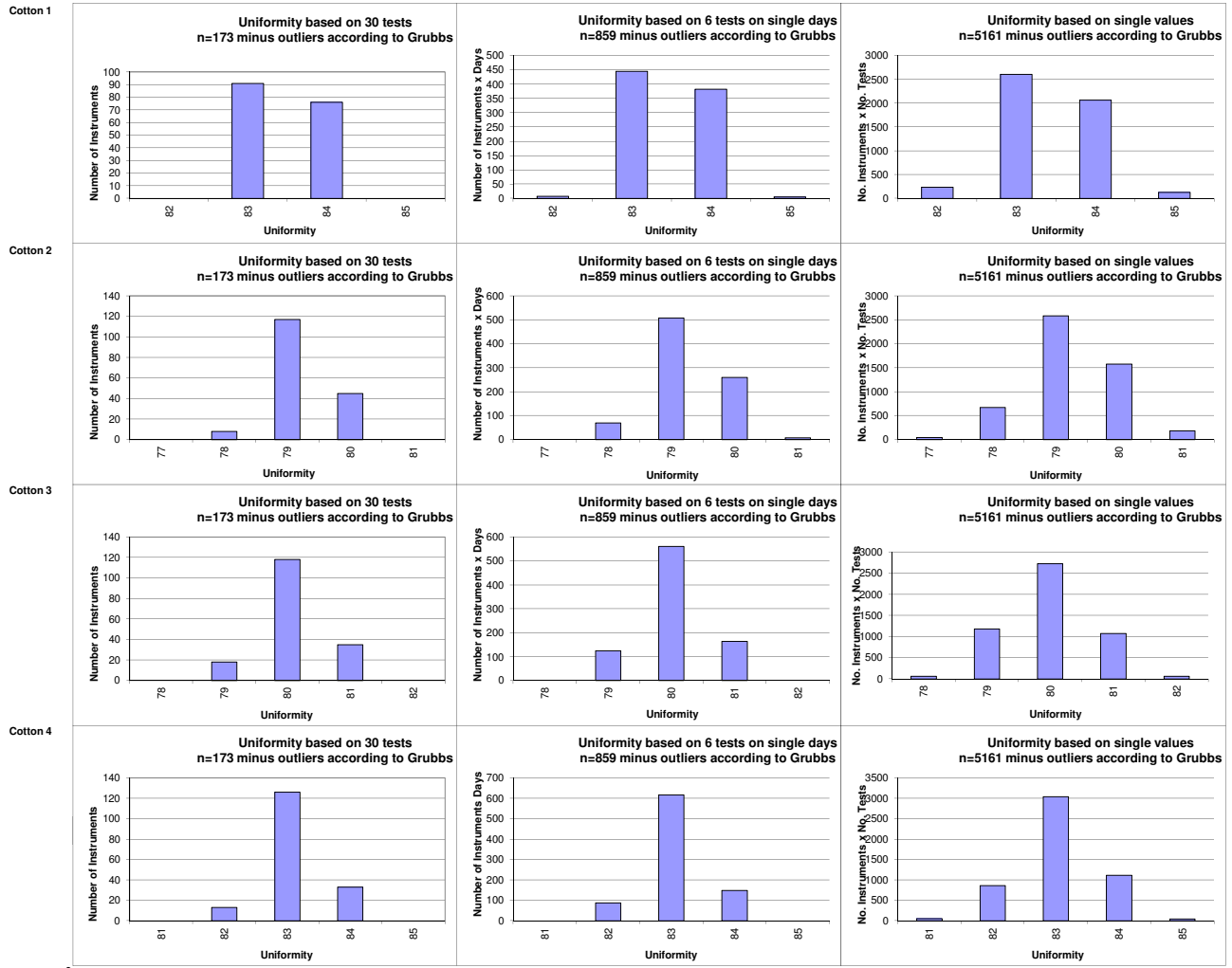
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



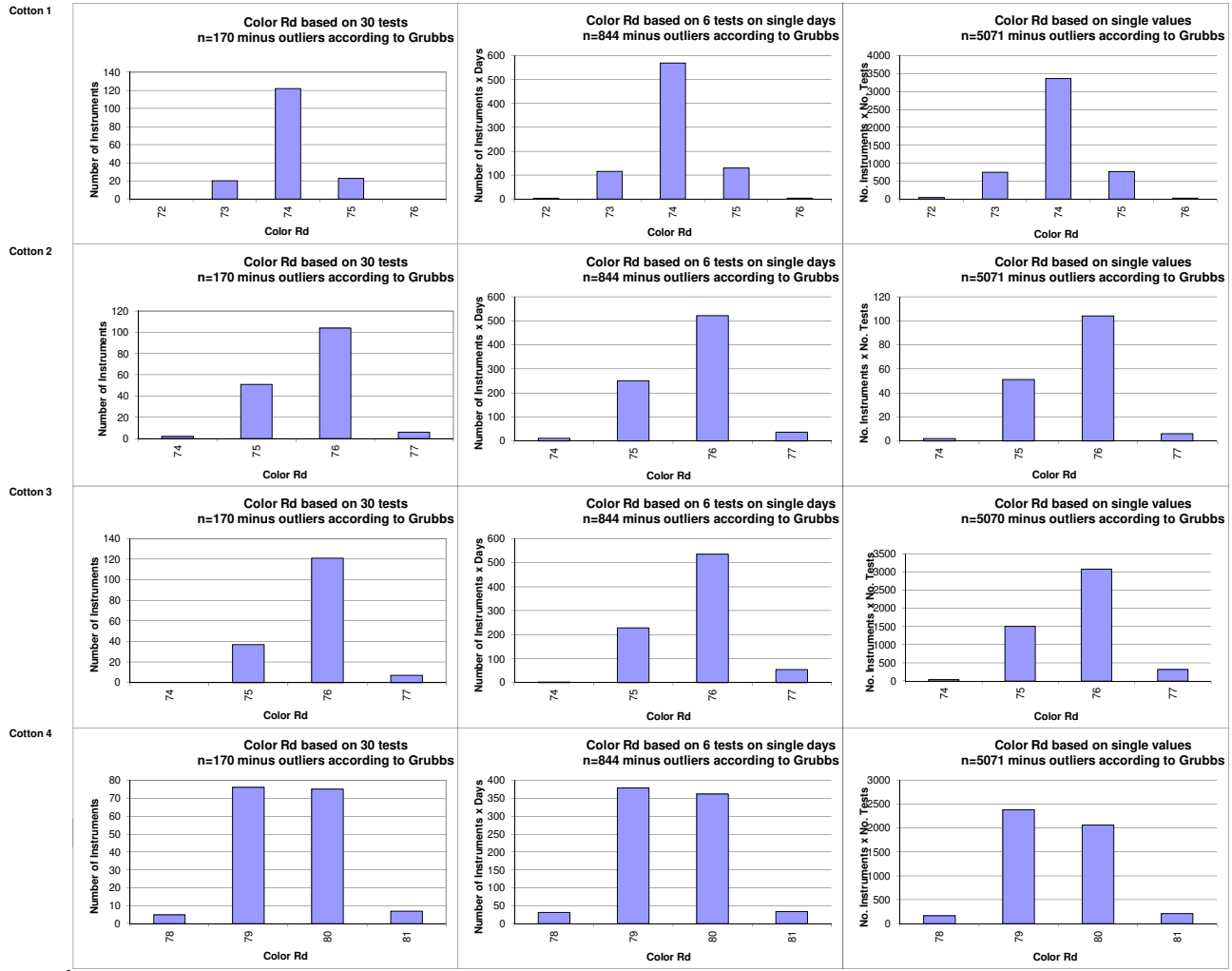
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



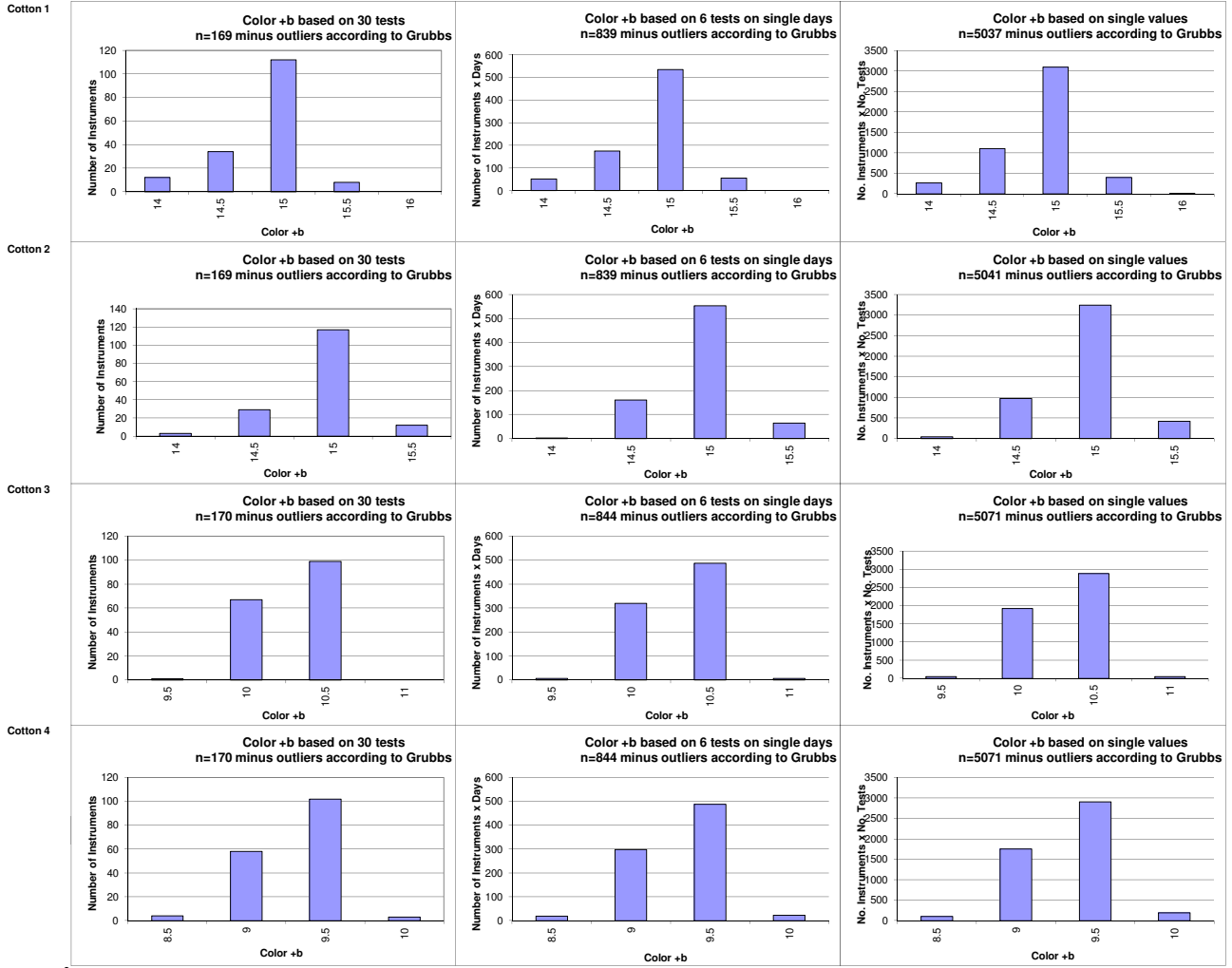
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



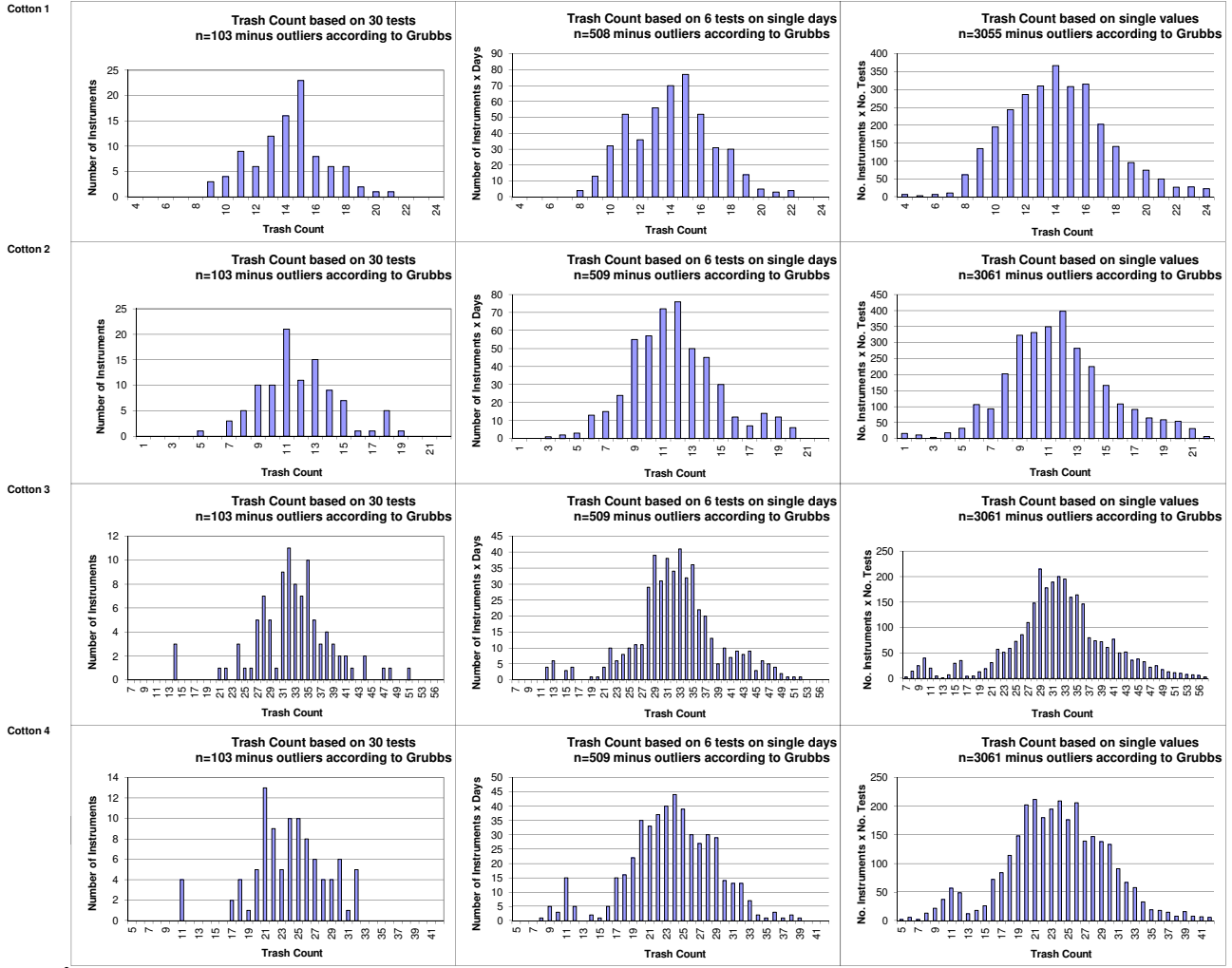
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



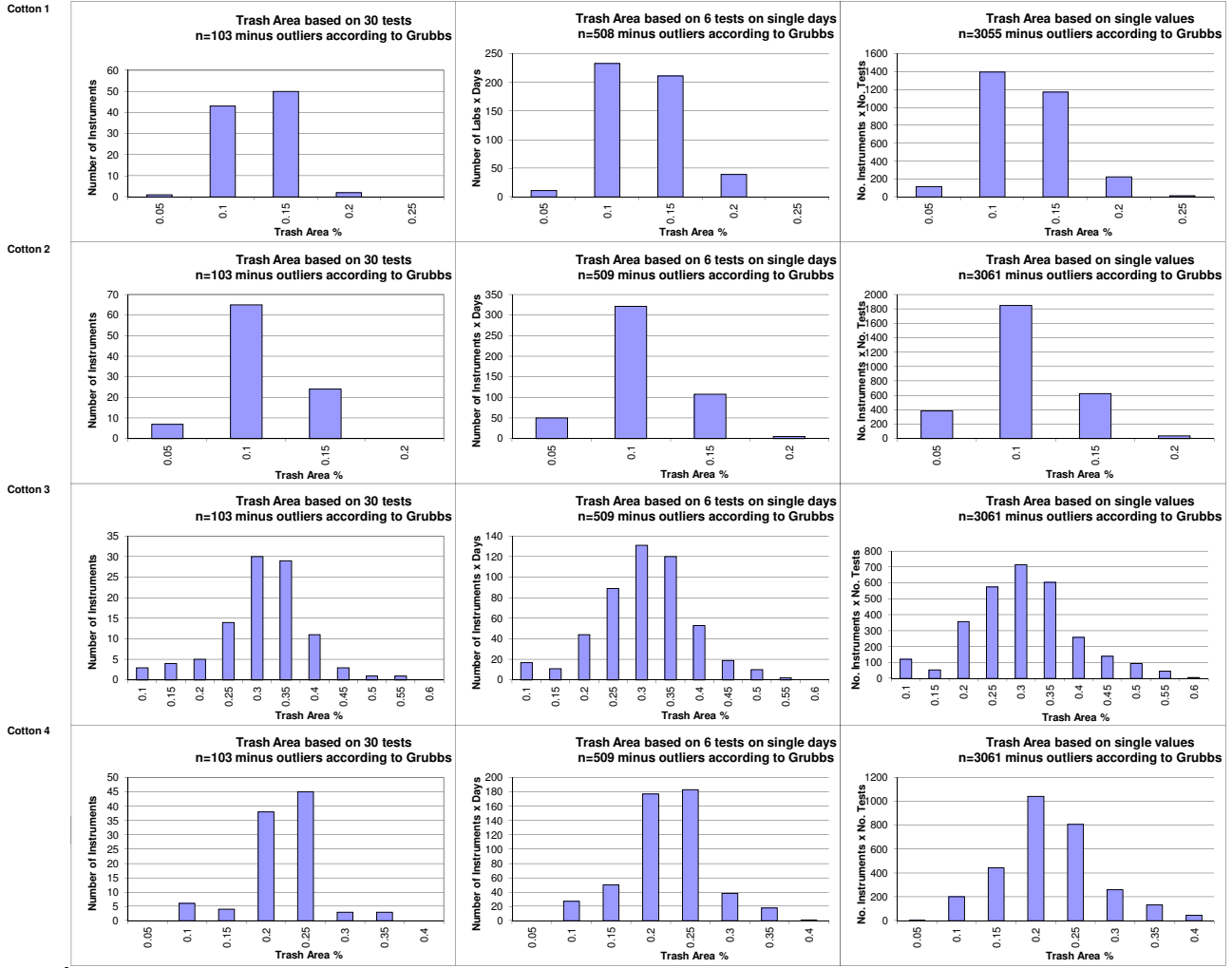
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



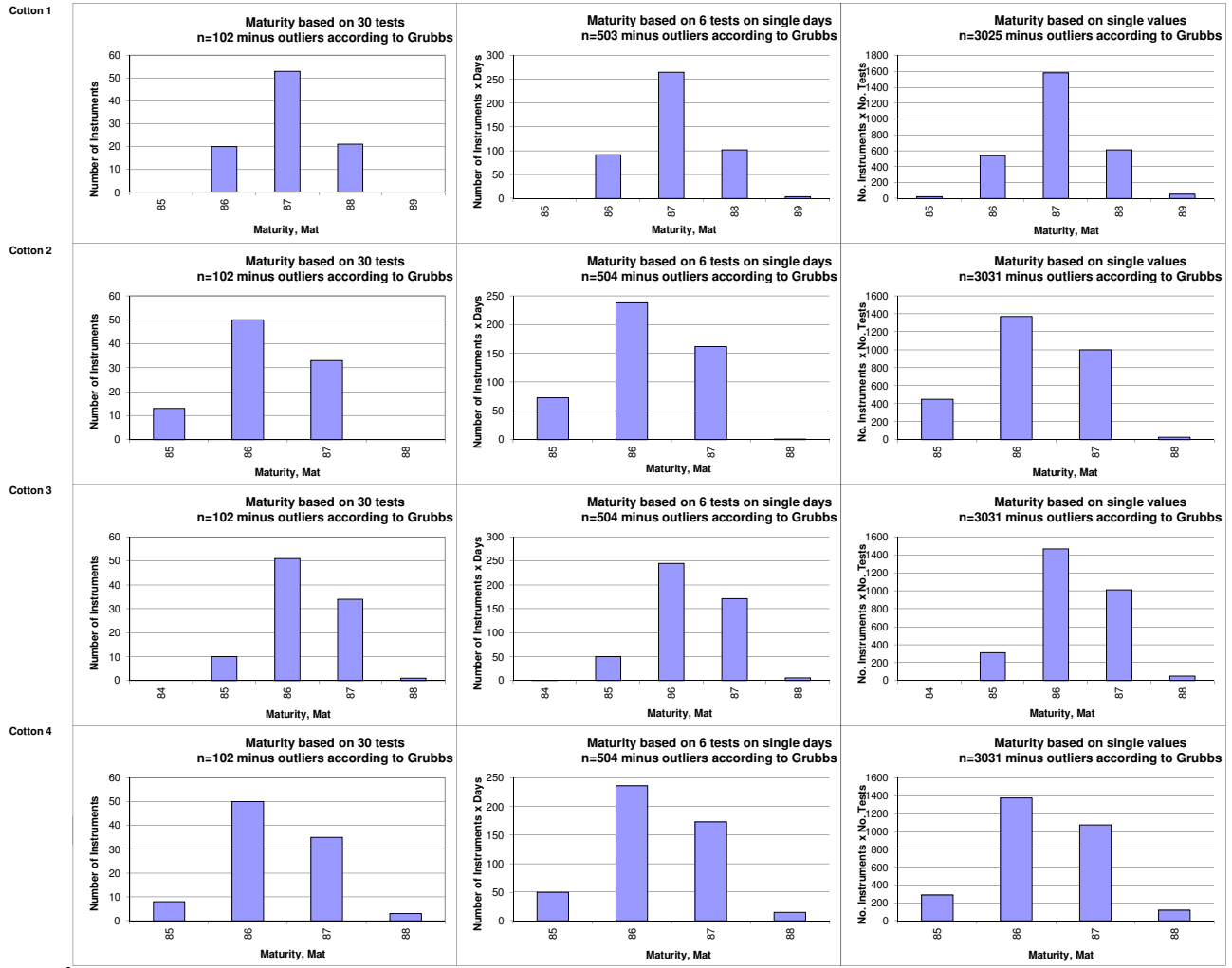
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



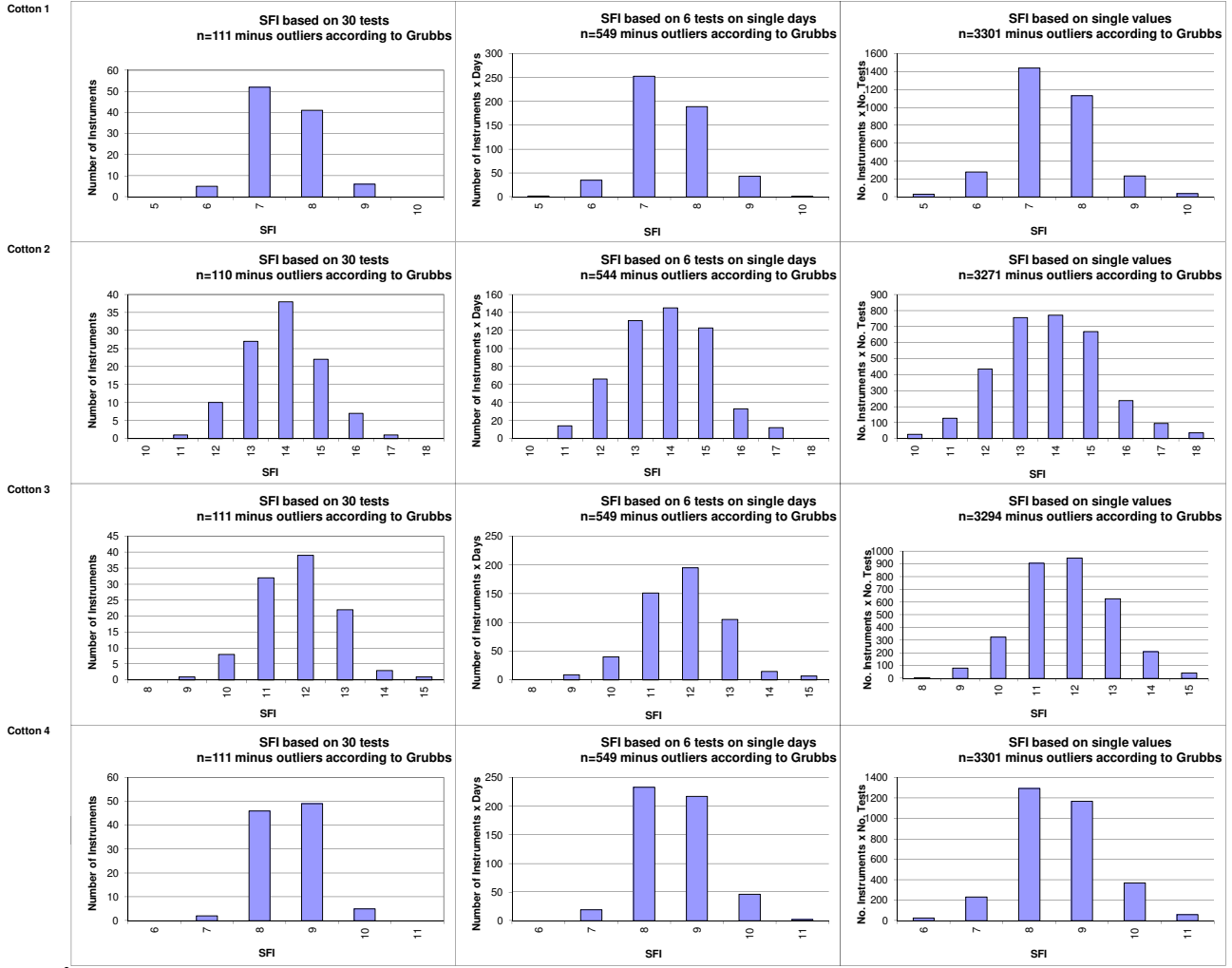
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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



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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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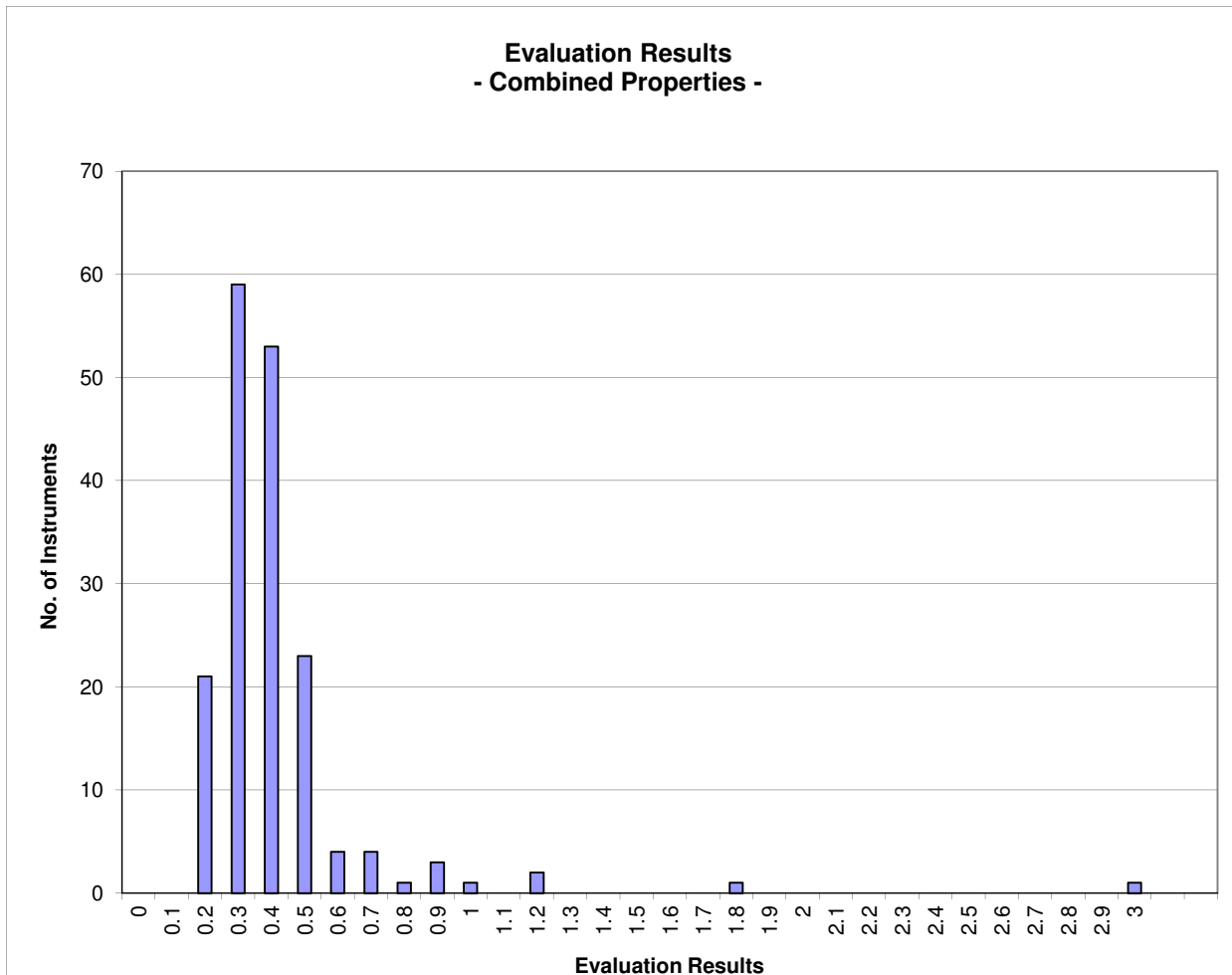
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2024 - 4

Statistics	Evaluation Combined Prop.
Average Overall Evaluation Result (OER)	0.41
OER Rating for the best instrument	0.19
max. OER Limit for belonging to the best 10% of the instruments	0.24
max. OER Limit for belonging to the best 25% of the instruments	0.29
max. OER Limit for belonging to the best 50% of the instruments	0.36
max. OER Limit for belonging to the best 75% of the instruments	0.44
OER Rating for the worst instrument	2.95

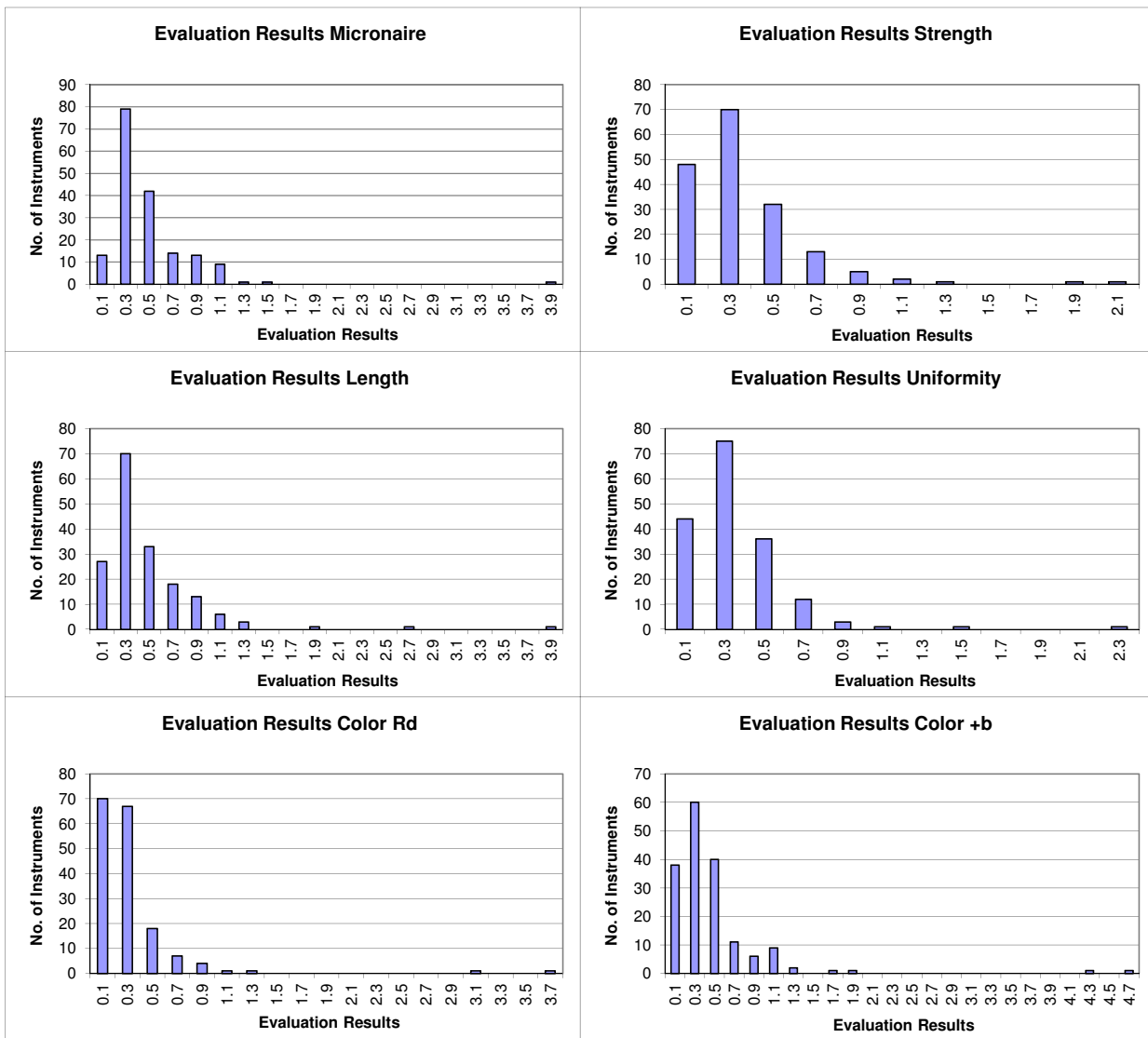


x-Axis shows midpoints of classes

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 2024 - 4

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.48	0.36	0.48	0.35	0.32	0.48
	Median	0.38	0.29	0.35	0.29	0.22	0.34
	Best Instr.	0.10	0.05	0.07	0.04	0.05	0.05
	Worst Instr.	3.88	2.06	3.94	2.34	3.65	4.62



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

Content:

- Based on Average of 30 Test Results
- Based on Single Test Results

Executed By:
Faserinstitut Bremen e.V., Bremen, Germany*
USDA-AMS, Memphis, TN, USA

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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	99.0	98.1	97.7	99.3	96.5	91.5
Completely within limits	97.7	96.0	93.1	98.3	92.9	81.8
% of Instruments $\geq 75\%$ within limits	99.4	97.7	98.3	98.8	95.9	89.4
% of Instruments $\geq 50\%$ within limits	99.4	99.4	99.4	100.0	98.2	96.5

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	98.0	95.4	89.0	98.6	96.1	89.1
% of Instruments 100% within limits	65.3	49.1	18.5	67.1	77.6	53.5
% of Instruments $\geq 95\%$ within limits	89.6	76.3	45.7	96.0	88.2	68.2
% of Instruments $\geq 75\%$ within limits	99.4	96.0	84.4	98.8	94.7	83.5
% of Instruments $\geq 65\%$ within limits	99.4	98.8	94.2	99.4	95.9	86.5
% of Instruments $\geq 50\%$ within limits	99.4	98.8	99.4	100.0	98.2	94.1