



International Cotton Advisory Committee



**CSITC
Global - Round Trial 2024 - 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 2024 - 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)			4.368	4.191	4.478	4.964	
Reference Values for Evaluation			4.368	4.191	4.478	4.964	
Number Of Instruments			164	164	164	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.059	0.060	0.056	0.050	0.056
		CV %	1.4	1.4	1.2	1.0	1.3
	based on 6 tests	SD	0.064	0.066	0.060	0.056	0.061
		CV %	1.5	1.6	1.3	1.1	1.4
	based on single tests	SD	0.071	0.073	0.067	0.065	0.069
		CV %	1.6	1.7	1.5	1.3	1.5
Typical within-instrument Variation (Median)	between different days	SD	0.019	0.022	0.020	0.022	0.021
	with each 6 tests	CV %	0.4	0.5	0.4	0.4	0.5
	between single tests on one day	SD	0.030	0.032	0.029	0.031	0.030
		CV %	0.7	0.8	0.6	0.6	0.7
	between all tests on different days	SD	0.037	0.042	0.035	0.039	0.038
		CV %	0.8	1.0	0.8	0.8	0.9

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			28.469	22.908	34.049	28.854	
Reference Values for Evaluation			28.469	22.908	34.049	28.854	
Number Of Instruments			164	164	164	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.649	0.763	0.772	0.818	0.751
		CV %	2.3	3.3	2.3	2.8	2.7
	based on 6 tests	SD	0.724	0.833	0.857	0.851	0.816
		CV %	2.5	3.6	2.5	2.9	2.9
	based on single tests	SD	0.854	0.958	1.014	0.961	0.947
		CV %	3.0	4.2	3.0	3.3	3.4
Typical within-instrument Variation (Median)	between different days	SD	0.282	0.250	0.298	0.288	0.280
	with each 6 tests	CV %	1.0	1.1	0.9	1.0	1.0
	between single tests on one day	SD	0.459	0.412	0.500	0.431	0.451
		CV %	1.6	1.8	1.5	1.5	1.6
	between all tests on different days	SD	0.541	0.489	0.626	0.550	0.552
		CV %	1.9	2.1	1.8	1.9	1.9

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.0883	0.9878	1.2129	1.1739	
Reference Values for Evaluation			1.0883	0.9878	1.2129	1.1739	
Number Of Instruments			164	164	164	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.0088	0.0092	0.0075	0.0099	0.0089
		CV %	0.8	0.9	0.6	0.8	0.8
	based on 6 tests	SD	0.0116	0.0111	0.0103	0.0115	0.0111
		CV %	1.1	1.1	0.9	1.0	1.0
	based on single tests	SD	0.0153	0.0159	0.0145	0.0152	0.0152
		CV %	1.4	1.6	1.2	1.3	1.4
Typical within-instrument Variation (Median)	between different days	SD	0.0051	0.0056	0.0048	0.0049	0.0051
	with each 6 tests	CV %	0.5	0.6	0.4	0.4	0.5
	between single tests on one day	SD	0.0091	0.0095	0.0092	0.0100	0.0094
		CV %	0.8	1.0	0.8	0.8	0.9
	between all tests on different days	SD	0.0103	0.0113	0.0103	0.0108	0.0107
		CV %	0.9	1.1	0.9	0.9	1.0

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			79.672	78.396	83.638	81.805	
Reference Values for Evaluation			79.672	78.396	83.638	81.805	
Number Of Instruments			164	164	164	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.486	0.425	0.466	0.434	0.453
		CV %	0.6	0.5	0.6	0.5	0.6
	based on 6 tests	SD	0.545	0.500	0.518	0.515	0.520
		CV %	0.7	0.6	0.6	0.6	0.6
	based on single tests	SD	0.765	0.708	0.679	0.700	0.713
		CV %	1.0	0.9	0.8	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.237	0.261	0.206	0.232	0.234
		CV %	0.3	0.3	0.2	0.3	0.3
	between single tests on one day	SD	0.467	0.492	0.409	0.471	0.460
		CV %	0.6	0.6	0.5	0.6	0.6
	between all tests on different days	SD	0.529	0.549	0.453	0.511	0.511
		CV %	0.7	0.7	0.5	0.6	0.6

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			78.515	75.885	75.565	77.023	
Reference Values for Evaluation			78.515	75.885	75.565	77.023	
Number Of Instruments			164	164	164	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.533	0.503	0.507	0.573	0.529
		CV %	0.7	0.7	0.7	0.7	0.7
	based on 6 tests	SD	0.569	0.525	0.532	0.583	0.552
		CV %	0.7	0.7	0.7	0.8	0.7
	based on single tests	SD	0.576	0.540	0.546	0.609	0.568
		CV %	0.7	0.7	0.7	0.8	0.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.139	0.154	0.149	0.148	0.147
		CV %	0.2	0.2	0.2	0.2	0.2
	between single tests on one day	SD	0.106	0.114	0.097	0.101	0.105
		CV %	0.1	0.2	0.1	0.1	0.1
	between all tests on different days	SD	0.173	0.208	0.199	0.204	0.196
		CV %	0.2	0.3	0.3	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			13.407	11.500	13.639	9.415	
Reference Values for Evaluation			13.407	11.500	13.639	9.415	
Number Of Instruments			163	164	163	164	164
Inter-Instrument Variation	based on 30 tests	SD	0.376	0.253	0.371	0.223	0.306
		CV %	2.8	2.2	2.7	2.4	2.5
	based on 6 tests	SD	0.394	0.269	0.369	0.242	0.318
		CV %	2.9	2.3	2.7	2.6	2.6
	based on single tests	SD	0.405	0.277	0.386	0.247	0.329
		CV %	3.0	2.4	2.8	2.6	2.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.097	0.080	0.091	0.085	0.088
		CV %	0.7	0.7	0.7	0.9	0.7
	between single tests on one day	SD	0.047	0.046	0.046	0.042	0.045
		CV %	0.4	0.4	0.3	0.4	0.4
	between all tests on different days	SD	0.132	0.104	0.104	0.106	0.111
		CV %	1.0	0.9	0.8	1.1	0.9

Optional Parameters

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

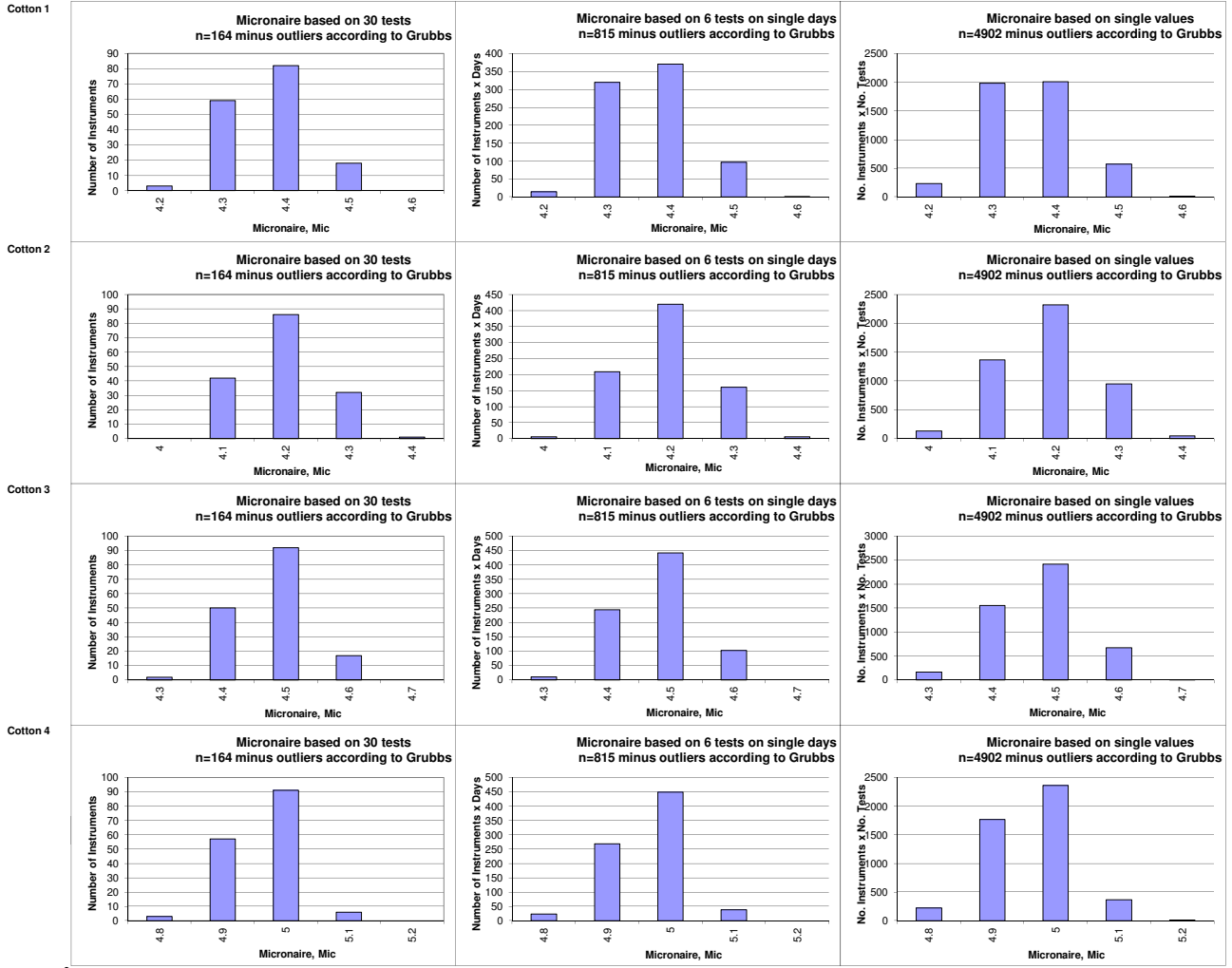
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			10.53	16.37	17.45	14.59	
Reference Values for Evaluation			10.53	16.37	17.45	14.59	
Number Of Instruments			102	102	102	102	102
Inter-Instrument Variation	based on 30 tests	SD	2.23	2.88	3.27	2.76	2.79
		CV %	21.2	17.6	18.8	18.9	19.1
	based on 6 tests	SD	3.40	3.99	4.09	4.11	3.90
		CV %	32.3	24.4	23.4	28.2	27.1
	based on single tests	SD	3.69	5.13	5.10	4.73	4.66
		CV %	35.0	31.4	29.2	32.4	32.0
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.26	1.65	1.76	1.77	1.61
		CV %	12.0	10.1	10.1	12.2	11.1
	between single tests on one day	SD	1.08	1.52	1.39	1.29	1.32
		CV %	10.3	9.3	7.9	8.9	9.1
	between all tests on different days	SD	2.06	2.81	2.74	2.61	2.55
		CV %	19.6	17.2	15.7	17.9	17.6

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.099	0.164	0.145	0.132	
Reference Values for Evaluation			0.099	0.164	0.145	0.132	
Number Of Instruments			102	102	102	102	102
Inter-Instrument Variation	based on 30 tests	SD	0.022	0.038	0.028	0.028	0.029
		CV %	21.8	23.5	19.3	21.2	21.5
	based on 6 tests	SD	0.025	0.044	0.036	0.037	0.036
		CV %	25.4	27.2	25.0	27.7	26.3
	based on single tests	SD	0.029	0.048	0.040	0.038	0.039
		CV %	29.3	29.6	27.2	28.4	28.6
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.016	0.025	0.018	0.019	0.019
		CV %	16.2	15.1	12.1	14.3	14.4
	between single tests on one day	SD	0.012	0.016	0.012	0.012	0.013
		CV %	12.6	9.6	8.6	9.1	10.0
	between all tests on different days	SD	0.023	0.038	0.026	0.030	0.029
		CV %	23.5	23.1	17.8	22.3	21.7

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.68	86.60	86.32	87.38	
Reference Values for Evaluation			85.68	86.60	86.32	87.38	
Number Of Instruments			101	101	101	101	101
Inter-Instrument Variation	based on 30 tests	SD	0.60	0.80	0.57	0.67	0.66
		CV %	0.7	0.9	0.7	0.8	0.8
	based on 6 tests	SD	0.63	0.81	0.64	0.66	0.68
		CV %	0.7	0.9	0.7	0.8	0.8
	based on single tests	SD	0.69	0.79	0.78	0.77	0.76
		CV %	0.8	0.9	0.9	0.9	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.09	0.12	0.09	0.14	0.11
		CV %	0.1	0.1	0.1	0.2	0.1
	between single tests on one day	SD	0.14	0.16	0.11	0.16	0.14
		CV %	0.2	0.2	0.1	0.2	0.2
	between all tests on different days	SD	0.18	0.25	0.19	0.26	0.22
		CV %	0.2	0.3	0.2	0.3	0.3

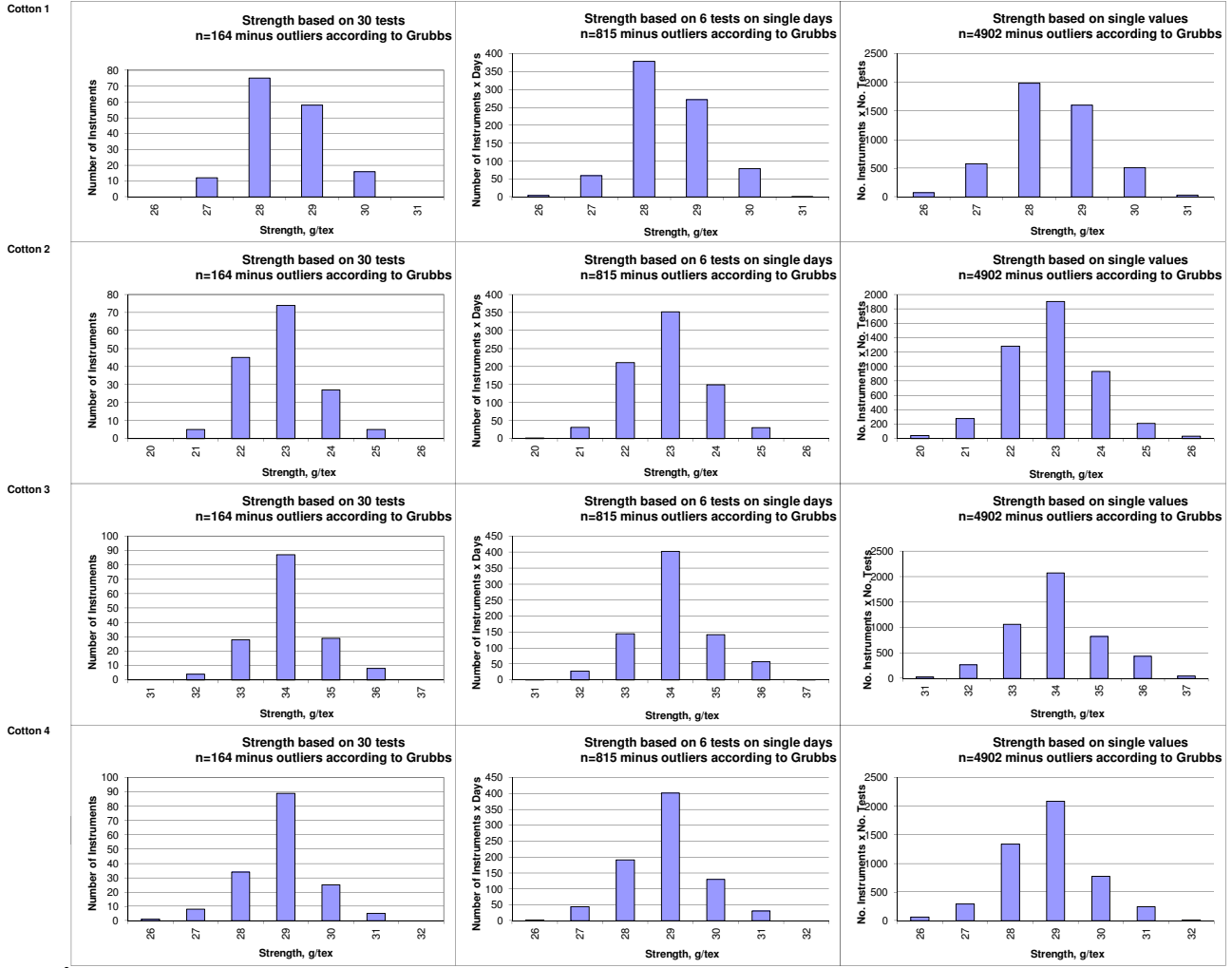
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			11.52	14.51	6.94	8.45	
Reference Values for Evaluation			11.52	14.51	6.94	8.45	
Number Of Instruments			105	104	105	105	105
Inter-Instrument Variation	based on 30 tests	SD	1.07	1.13	0.73	0.82	0.93
		CV %	9.3	7.8	10.4	9.7	9.3
	based on 6 tests	SD	1.17	1.22	0.75	0.85	1.00
		CV %	10.2	8.4	10.7	10.1	9.8
	based on single tests	SD	1.29	1.49	0.79	0.90	1.12
		CV %	11.2	10.3	11.4	10.6	10.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.33	0.39	0.18	0.22	0.28
		CV %	2.8	2.7	2.6	2.6	2.7
	between single tests on one day	SD	0.59	0.79	0.32	0.38	0.52
		CV %	5.1	5.4	4.6	4.5	4.9
	between all tests on different days	SD	0.69	0.93	0.36	0.45	0.61
		CV %	5.9	6.4	5.2	5.3	5.7

Test Result Distributions
Micronaire



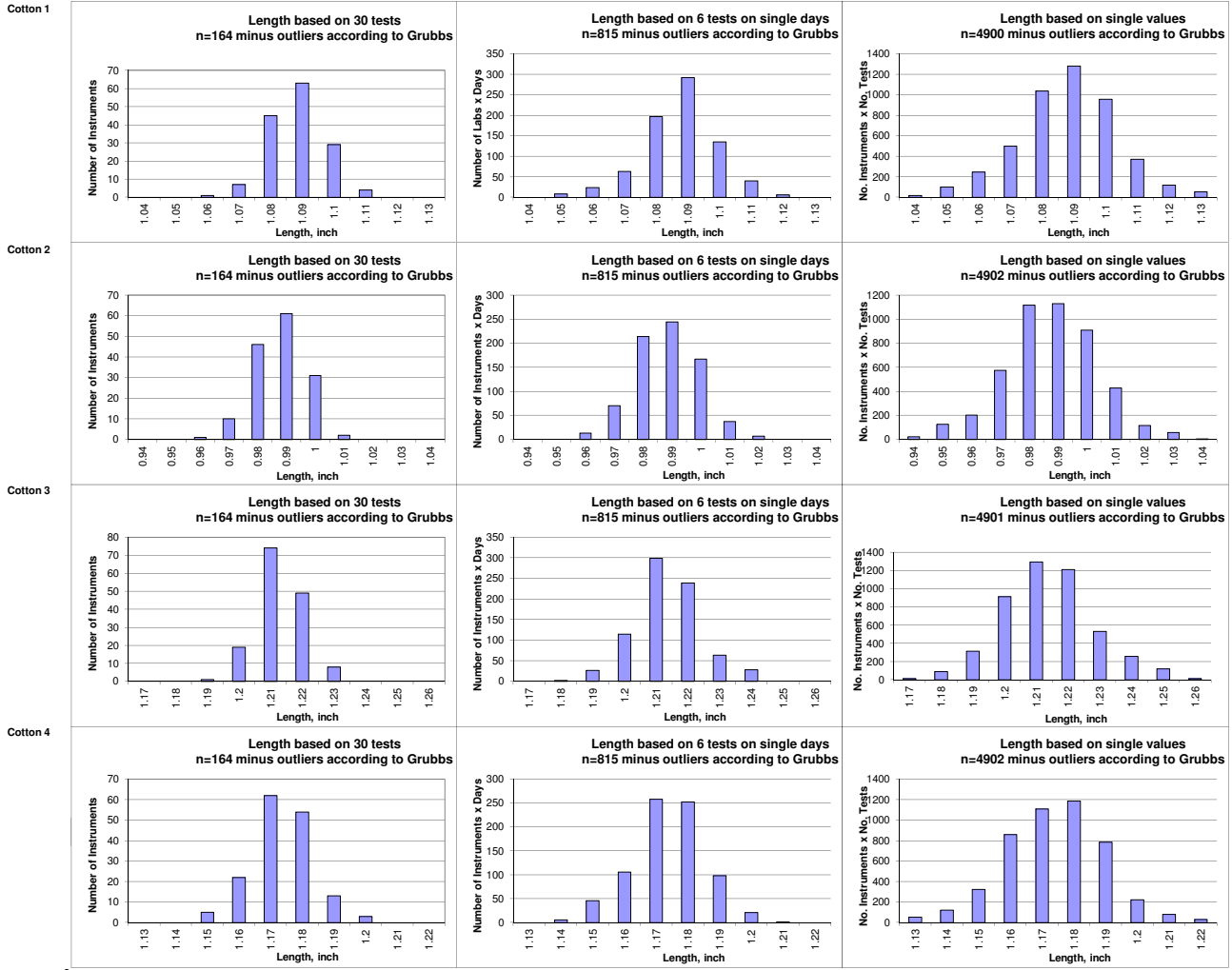
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



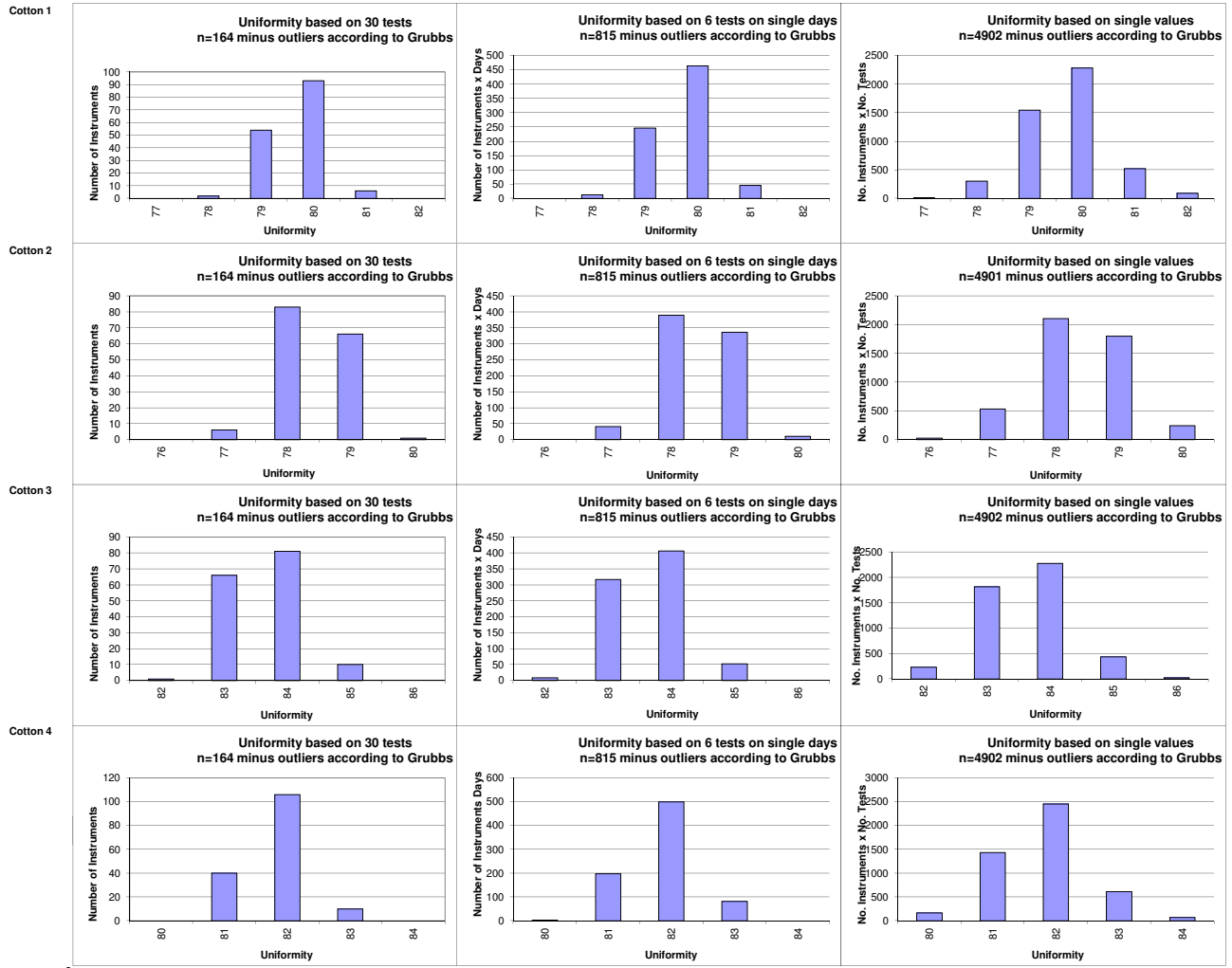
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
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Test Result Distributions
Length



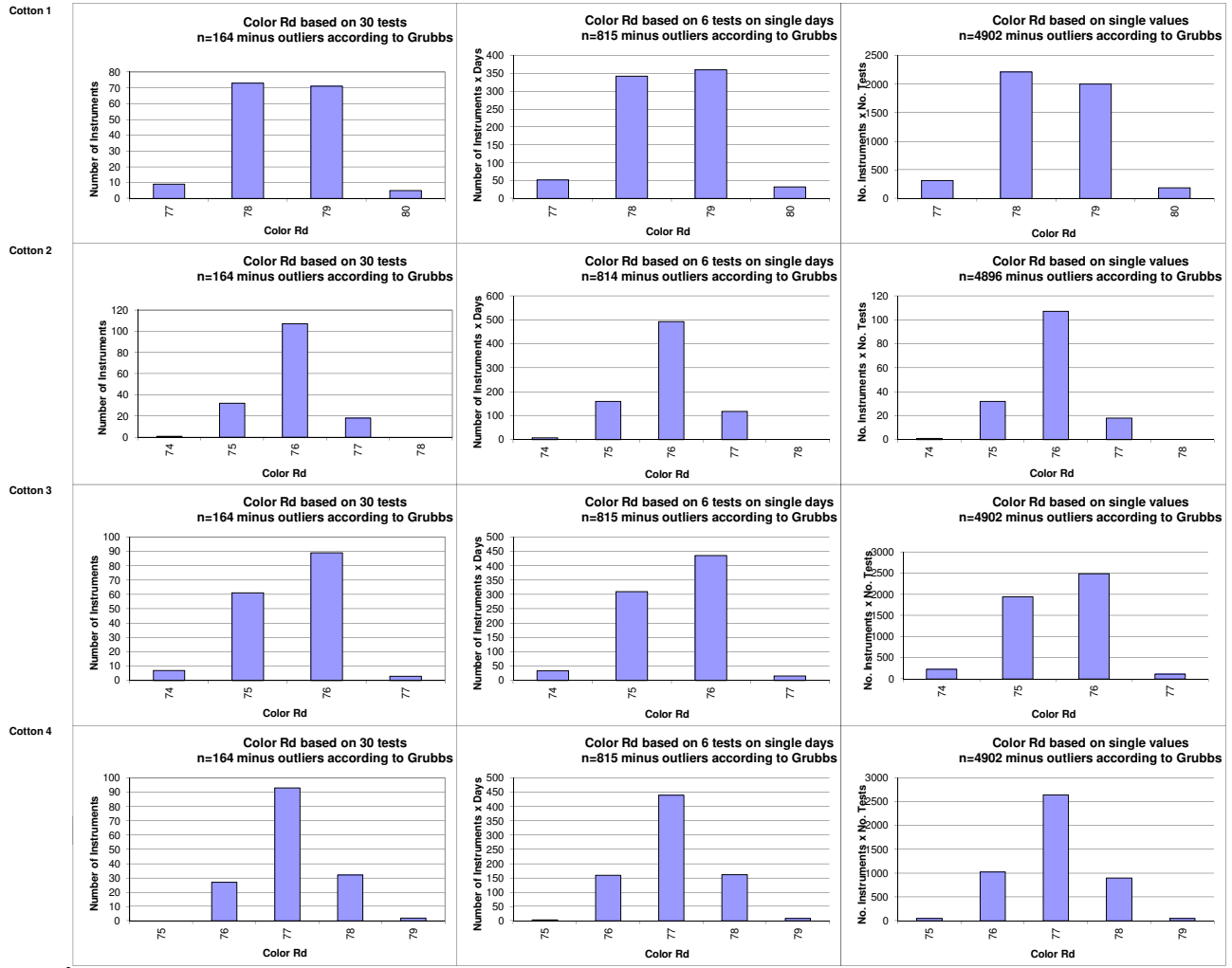
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



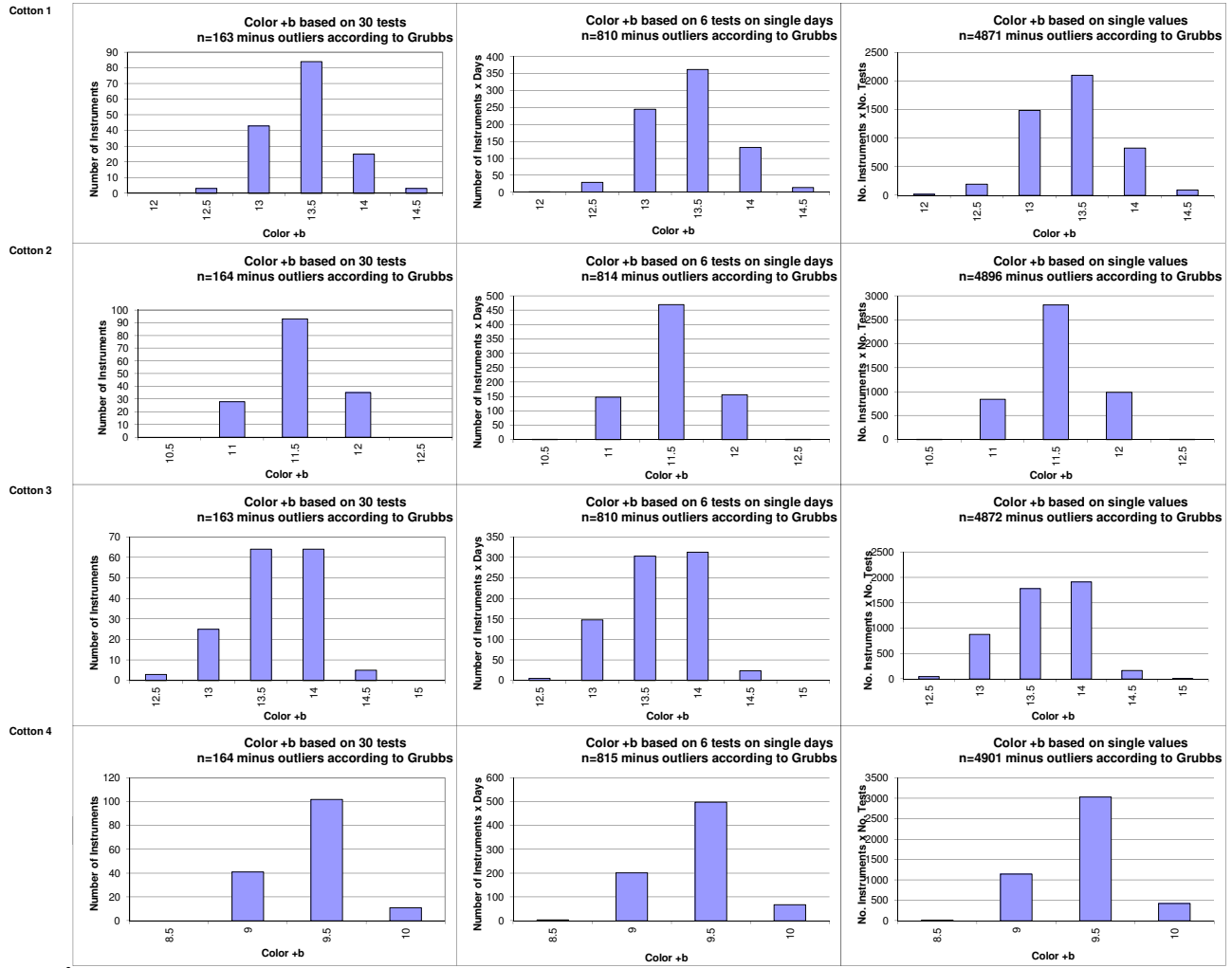
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



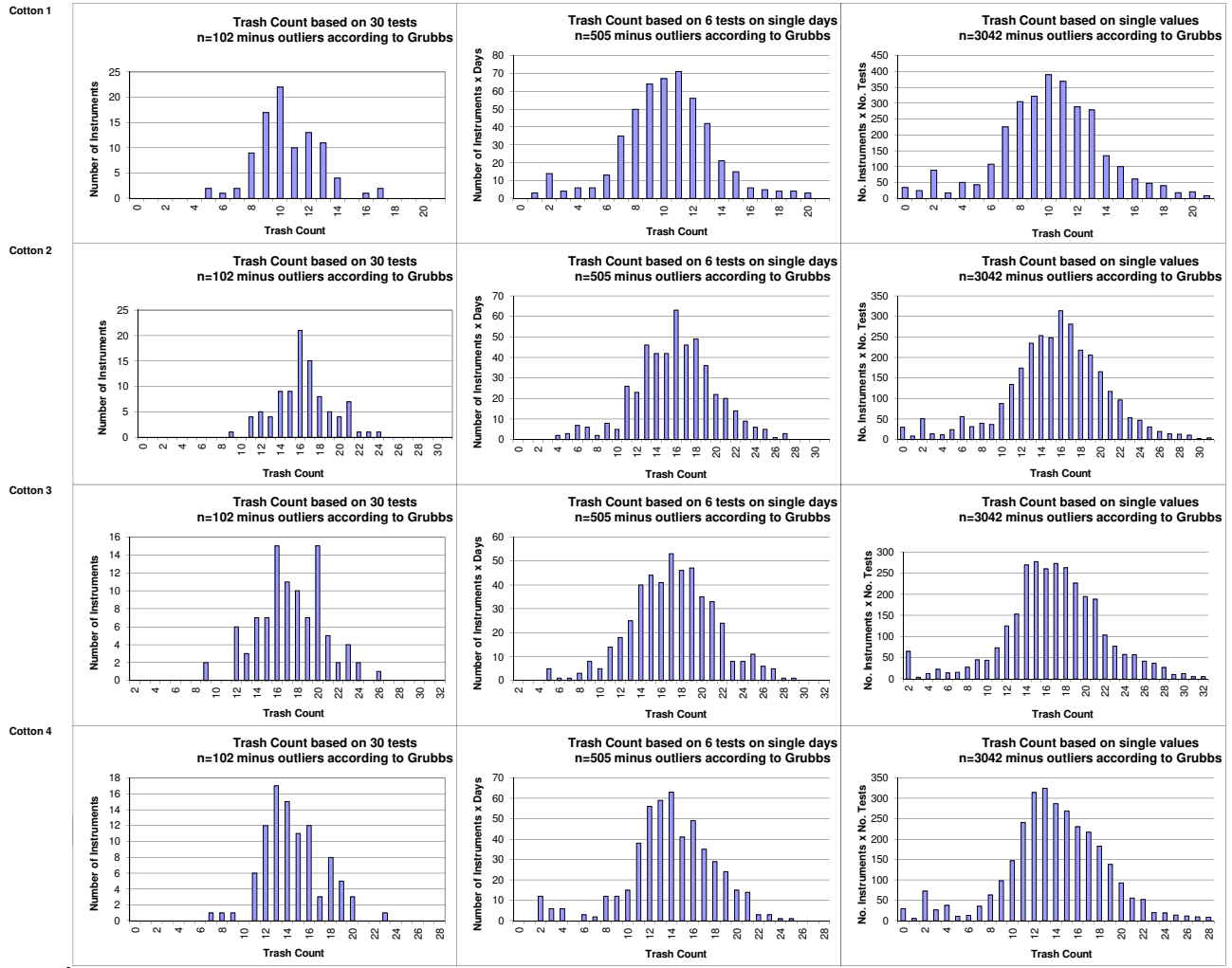
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(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



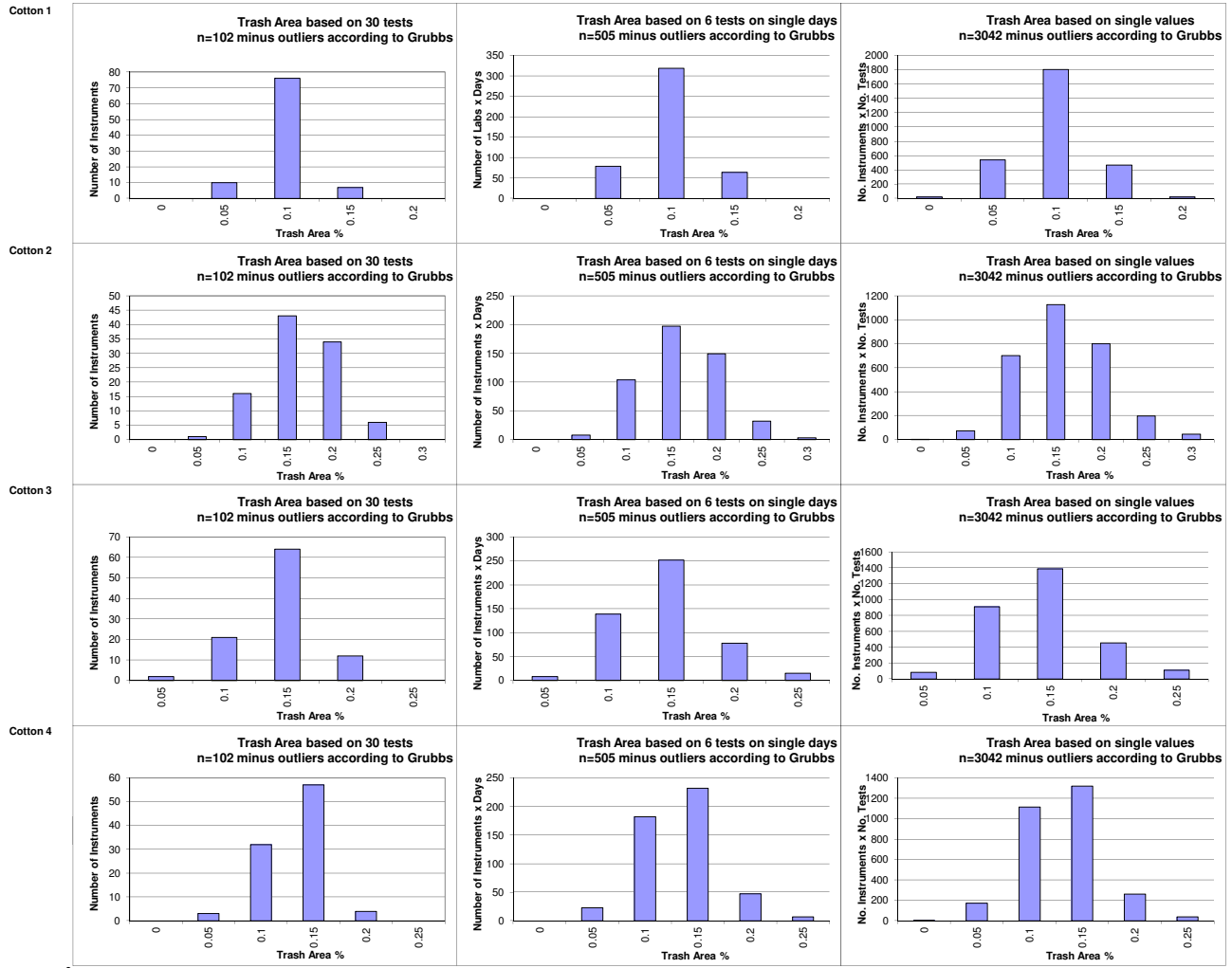
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



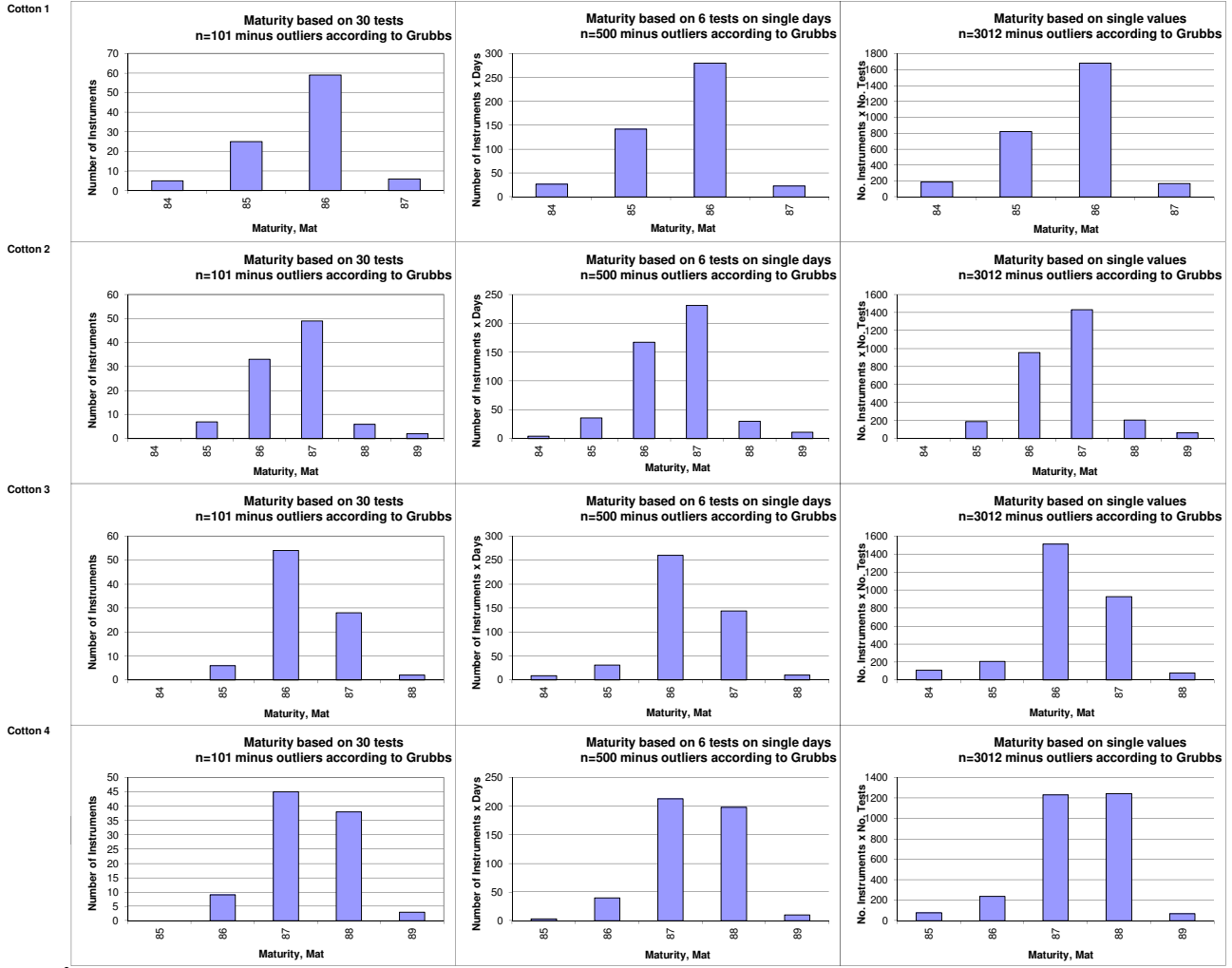
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



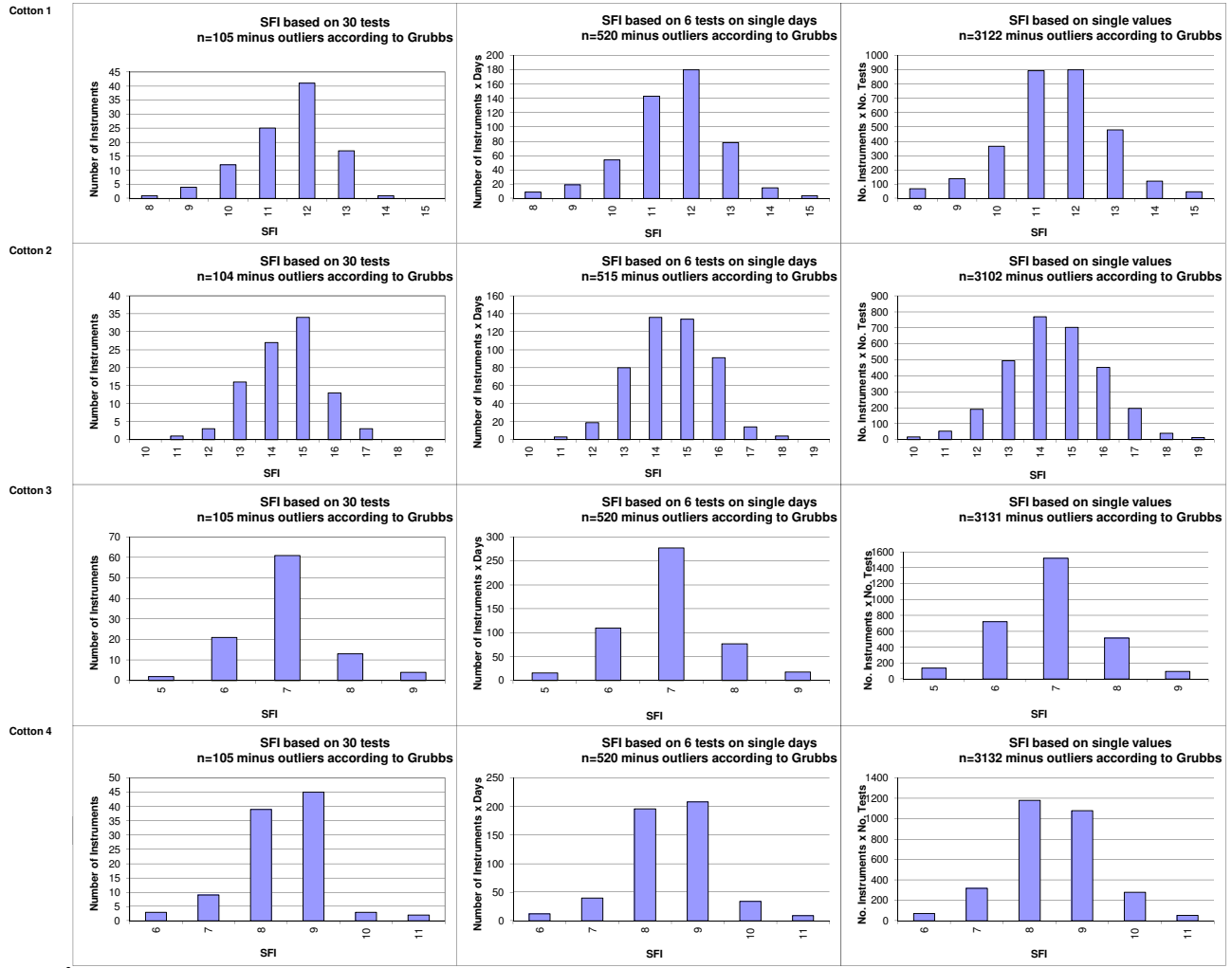
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2024 - 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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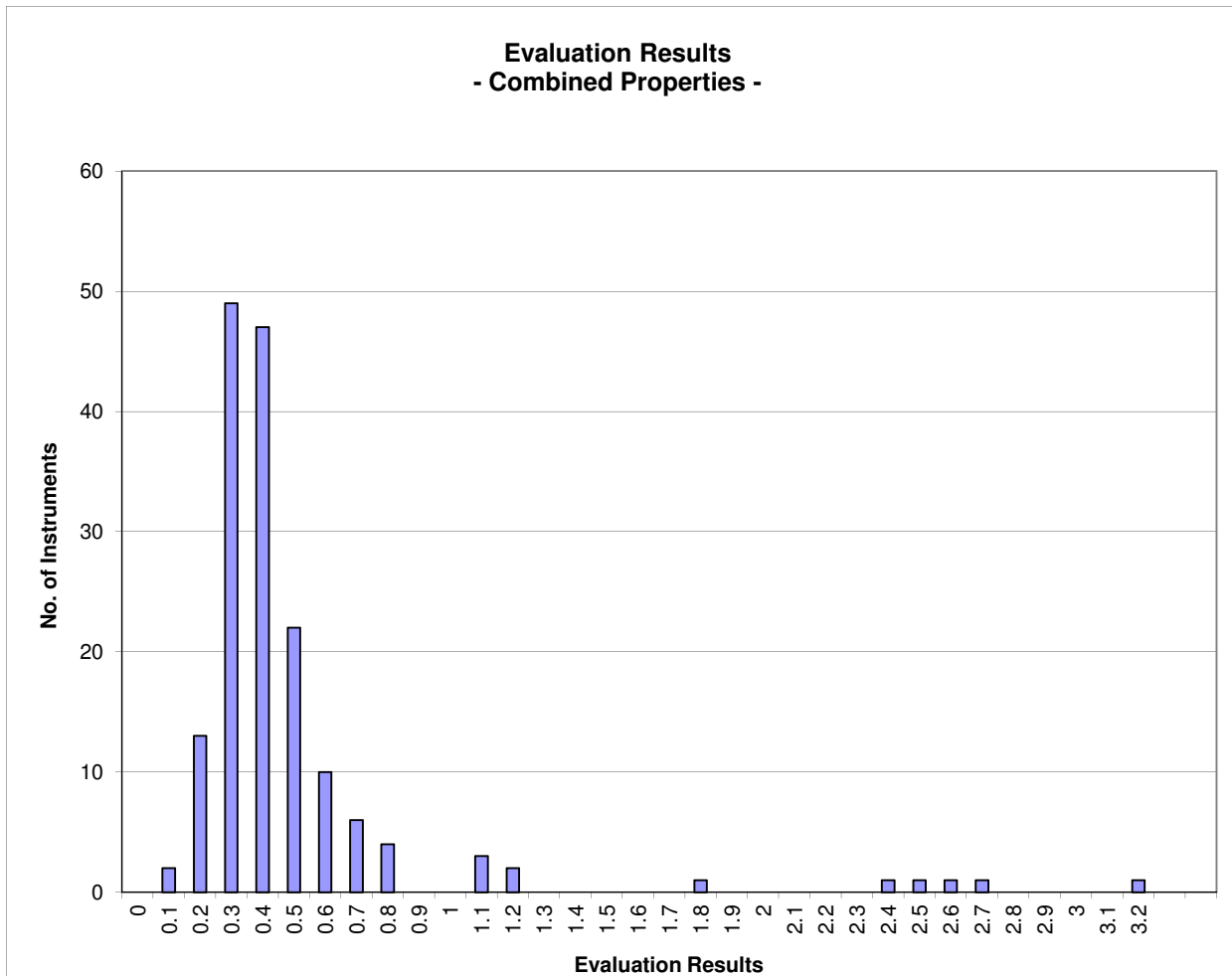
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2024 - 3

Statistics	Evaluation Combined Prop.
Average Overall Evaluation Result (OER)	0.50
OER Rating for the best instrument	0.13
max. OER Limit for belonging to the best 10% of the instruments	0.26
max. OER Limit for belonging to the best 25% of the instruments	0.31
max. OER Limit for belonging to the best 50% of the instruments	0.40
max. OER Limit for belonging to the best 75% of the instruments	0.48
OER Rating for the worst instrument	3.16

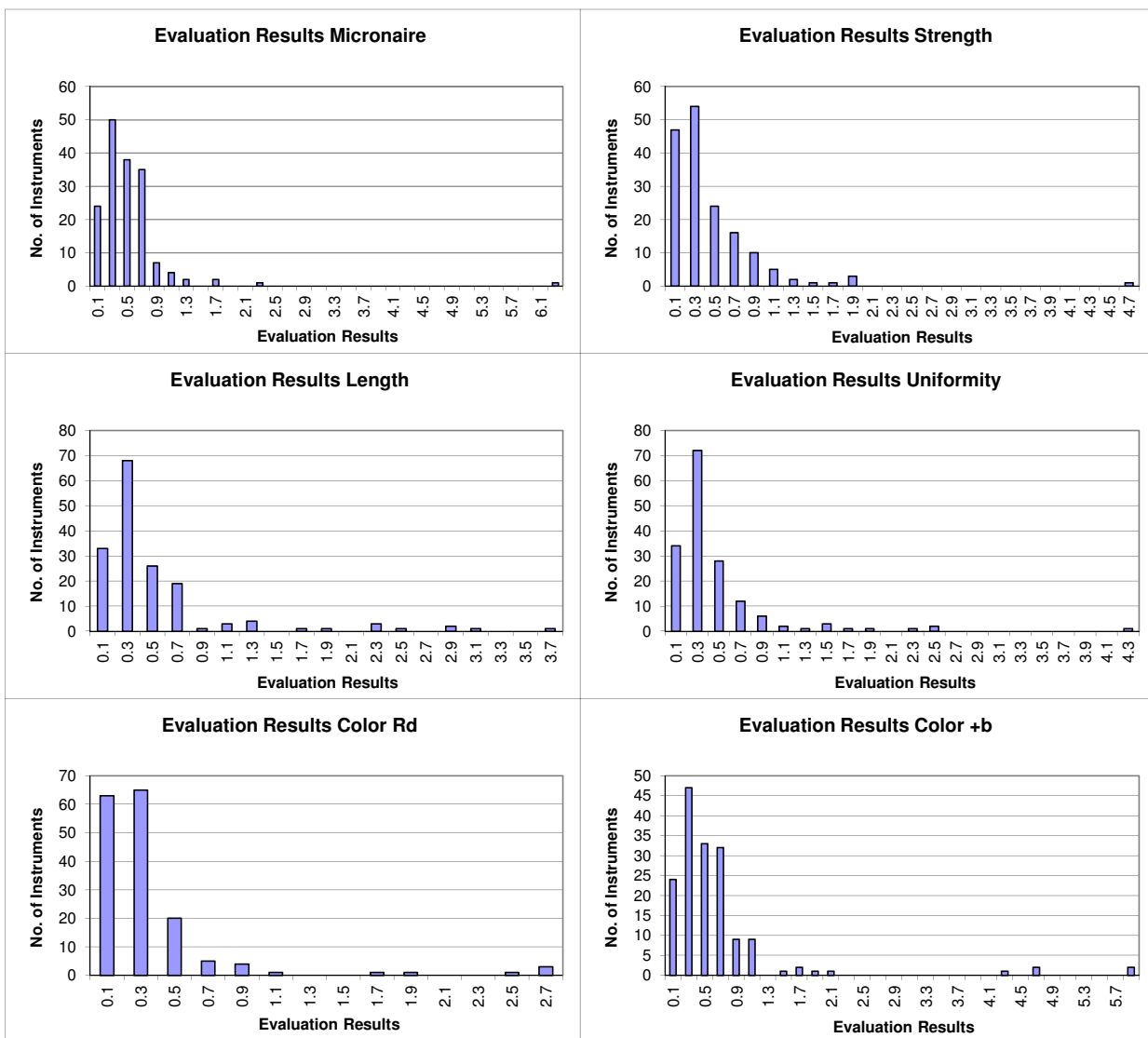


x-Axis shows midpoints of classes

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 - 3

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.53	0.46	0.51	0.46	0.36	0.66
	Median	0.42	0.30	0.34	0.30	0.24	0.46
	Best Instr.	0.03	0.04	0.04	0.06	0.05	0.10
	Worst Instr.	6.31	4.72	3.76	4.23	2.75	5.98



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



International Cotton Advisory Committee



CSITC Global - Round Trial 2024 - 3 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

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	98.0	95.6	94.2	95.9	95.4	85.2
Completely within limits	96.3	87.8	89.0	93.9	92.1	64.6
% of Instruments $\geq 75\%$ within limits	97.6	97.0	92.1	94.5	95.1	86.6
% of Instruments $\geq 50\%$ within limits	98.8	98.2	97.6	97.6	96.3	93.3

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	97.4	92.6	85.6	96.0	94.9	82.8
% of Instruments 100% within limits	68.9	44.5	11.6	64.0	75.6	28.0
% of Instruments $\geq 95\%$ within limits	91.5	71.3	39.0	91.5	84.1	44.5
% of Instruments $\geq 75\%$ within limits	96.3	89.6	82.9	94.5	93.9	76.2
% of Instruments $\geq 65\%$ within limits	97.6	93.3	90.9	95.1	95.7	86.0
% of Instruments $\geq 50\%$ within limits	98.8	97.6	93.9	97.6	95.7	90.9