



International Cotton Advisory Committee



CSITC Global - Round Trial 2023 - 2 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.



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Global - Round Trial 2023 - 2

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

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			5.153	4.355	3.871	4.230	
Reference Values for Evaluation			5.153	4.355	3.871	4.230	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.059	0.052	0.066	0.066	0.061
		CV %	1.1	1.2	1.7	1.6	1.4
	based on 6 tests	SD	0.064	0.063	0.062	0.074	0.066
		CV %	1.2	1.4	1.6	1.7	1.5
	based on single tests	SD	0.072	0.074	0.071	0.078	0.074
		CV %	1.4	1.7	1.8	1.8	1.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.027	0.025	0.024	0.024	0.025
		CV %	0.5	0.6	0.6	0.6	0.6
	between single tests on one day	SD	0.034	0.035	0.031	0.035	0.034
		CV %	0.7	0.8	0.8	0.8	0.8
	between all tests on different days	SD	0.043	0.046	0.040	0.044	0.043
		CV %	0.8	1.0	1.0	1.0	1.0

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			28.636	31.194	24.745	28.318	
Reference Values for Evaluation			28.636	31.194	24.745	28.318	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.557	0.589	0.757	0.595	0.625
		CV %	1.9	1.9	3.1	2.1	2.2
	based on 6 tests	SD	0.640	0.776	0.807	0.722	0.736
		CV %	2.2	2.5	3.3	2.5	2.6
	based on single tests	SD	0.831	0.988	0.986	0.916	0.930
		CV %	2.9	3.2	4.0	3.2	3.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.314	0.349	0.341	0.390	0.349
		CV %	1.1	1.1	1.4	1.4	1.2
	between single tests on one day	SD	0.482	0.572	0.624	0.623	0.575
		CV %	1.7	1.8	2.5	2.2	2.1
	between all tests on different days	SD	0.571	0.664	0.684	0.695	0.654
		CV %	2.0	2.1	2.8	2.5	2.3

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.1090	1.1835	0.9919	1.0633	
Reference Values for Evaluation			1.1090	1.1835	0.9919	1.0633	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.0079	0.0094	0.0094	0.0102	0.0092
		CV %	0.7	0.8	0.9	1.0	0.9
	based on 6 tests	SD	0.0091	0.0110	0.0113	0.0116	0.0107
		CV %	0.8	0.9	1.1	1.1	1.0
	based on single tests	SD	0.0125	0.0142	0.0150	0.0155	0.0143
		CV %	1.1	1.2	1.5	1.5	1.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0045	0.0055	0.0053	0.0062	0.0054
		CV %	0.4	0.5	0.5	0.6	0.5
	between single tests on one day	SD	0.0087	0.0098	0.0109	0.0105	0.0100
		CV %	0.8	0.8	1.1	1.0	0.9
	between all tests on different days	SD	0.0095	0.0115	0.0119	0.0121	0.0112
		CV %	0.9	1.0	1.2	1.1	1.0

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			83.212	83.043	78.352	79.778	
Reference Values for Evaluation			83.212	83.043	78.352	79.778	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.459	0.514	0.460	0.500	0.483
		CV %	0.6	0.6	0.6	0.6	0.6
	based on 6 tests	SD	0.532	0.592	0.567	0.589	0.570
		CV %	0.6	0.7	0.7	0.7	0.7
Typical within-instrument Variation (Median)	based on single tests	SD	0.692	0.765	0.773	0.808	0.759
		CV %	0.8	0.9	1.0	1.0	0.9
	between different days with each 6 tests	SD	0.223	0.255	0.284	0.251	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	0.427	0.496	0.568	0.548	0.510
		CV %	0.5	0.6	0.7	0.7	0.6
	between all tests on different days	SD	0.473	0.544	0.622	0.602	0.560
		CV %	0.6	0.7	0.8	0.8	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			72.873	73.712	77.143	75.984	
Reference Values for Evaluation			72.873	73.712	77.143	75.984	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.505	0.498	0.394	0.414	0.453
		CV %	0.7	0.7	0.5	0.5	0.6
	based on 6 tests	SD	0.519	0.540	0.416	0.426	0.475
		CV %	0.7	0.7	0.5	0.6	0.6
Typical within-instrument Variation (Median)	based on single tests	SD	0.539	0.564	0.431	0.447	0.495
		CV %	0.7	0.8	0.6	0.6	0.7
	between different days with each 6 tests	SD	0.165	0.157	0.125	0.128	0.144
		CV %	0.2	0.2	0.2	0.2	0.2
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.127	0.133	0.115	0.128	0.126
		CV %	0.2	0.2	0.1	0.2	0.2
	between all tests on different days	SD	0.220	0.253	0.184	0.196	0.213
		CV %	0.3	0.3	0.2	0.3	0.3

Color +b							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			16.329	15.466	12.580	10.131	
Reference Values for Evaluation			16.329	15.466	12.580	10.131	
Number Of Instruments			104	104	104	104	104
Inter-Instrument Variation	based on 30 tests	SD	0.374	0.337	0.263	0.229	0.301
		CV %	2.3	2.2	2.1	2.3	2.2
	based on 6 tests	SD	0.405	0.356	0.278	0.241	0.320
		CV %	2.5	2.3	2.2	2.4	2.3
Typical within-instrument Variation (Median)	based on single tests	SD	0.420	0.378	0.293	0.254	0.337
		CV %	2.6	2.4	2.3	2.5	2.5
	between different days with each 6 tests	SD	0.105	0.091	0.088	0.084	0.092
		CV %	0.6	0.6	0.7	0.8	0.7
Typical within-instrument Variation (Median)	between single tests on one day	SD	0.079	0.079	0.068	0.065	0.073
		CV %	0.5	0.5	0.5	0.6	0.5
	between all tests on different days	SD	0.164	0.177	0.126	0.113	0.145
		CV %	1.0	1.1	1.0	1.1	1.1

Optional Parameters

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

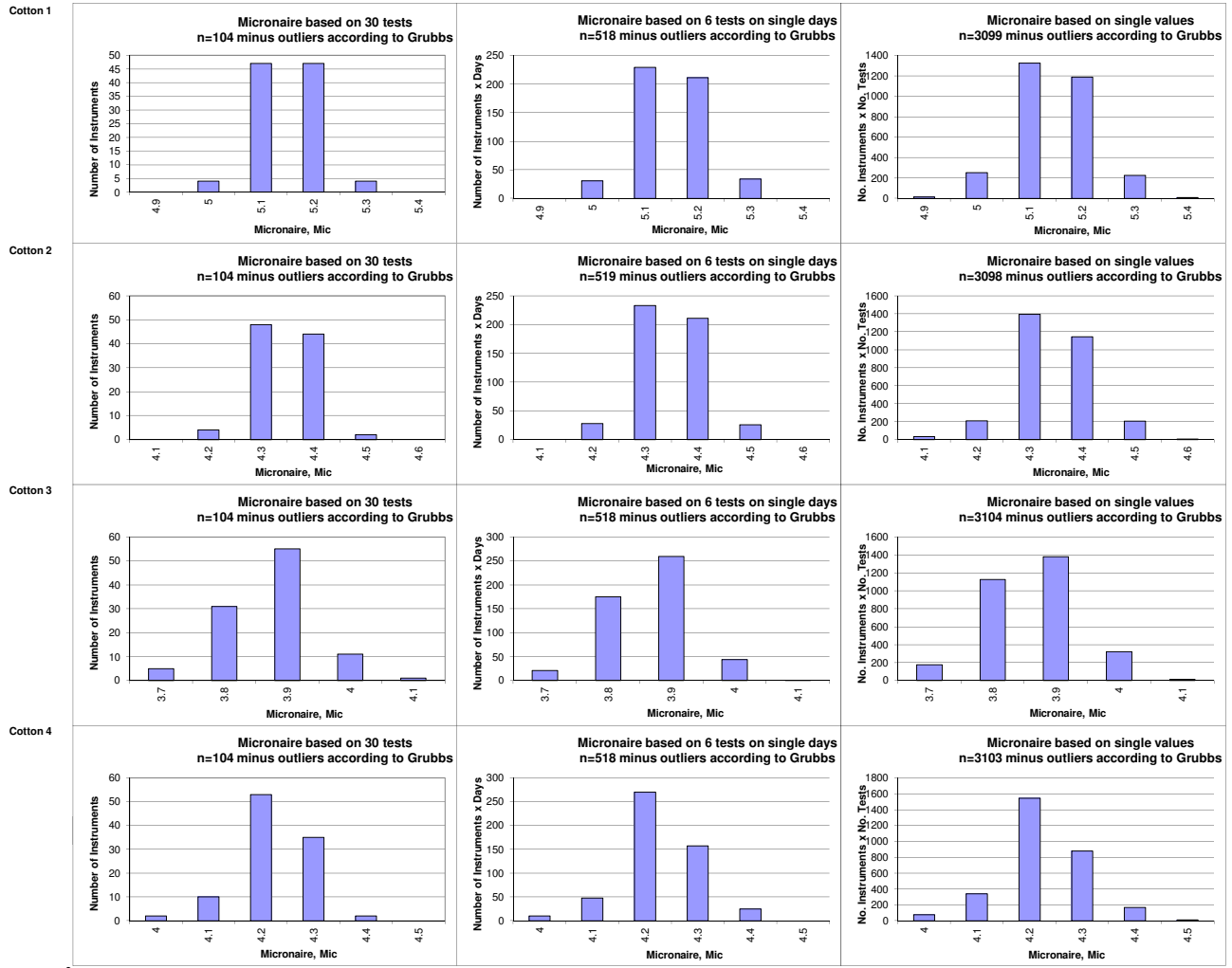
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			11.00	10.17	18.56	29.60	
Reference Values for Evaluation			11.00	10.17	18.56	29.60	
Number Of Instruments			85	85	85	85	85
Inter-Instrument Variation	based on 30 tests	SD	2.29	1.70	3.91	3.84	2.94
		CV %	20.9	16.7	21.1	13.0	17.9
	based on 6 tests	SD	2.75	2.16	4.31	4.23	3.36
		CV %	25.0	21.3	23.2	14.3	20.9
	based on single tests	SD	3.48	3.05	5.17	6.00	4.43
		CV %	31.6	30.0	27.8	20.3	27.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	1.17	1.14	1.50	2.14	1.49
		CV %	10.6	11.2	8.1	7.2	9.3
	between single tests on one day	SD	1.40	1.47	2.04	2.74	1.91
		CV %	12.7	14.5	11.0	9.2	11.9
	between all tests on different days	SD	1.94	1.89	2.77	3.88	2.62
		CV %	17.6	18.6	14.9	13.1	16.1

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.104	0.092	0.146	0.293	
Reference Values for Evaluation			0.104	0.092	0.146	0.293	
Number Of Instruments			85	85	85	85	85
Inter-Instrument Variation	based on 30 tests	SD	0.023	0.014	0.033	0.049	0.030
		CV %	22.4	15.3	22.7	16.8	19.3
	based on 6 tests	SD	0.027	0.017	0.040	0.063	0.037
		CV %	26.3	18.7	27.2	21.5	23.4
	based on single tests	SD	0.032	0.023	0.044	0.076	0.044
		CV %	30.4	25.5	29.9	25.8	27.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.011	0.011	0.019	0.037	0.019
		CV %	10.7	11.6	12.9	12.6	12.0
	between single tests on one day	SD	0.012	0.012	0.018	0.037	0.020
		CV %	11.6	12.9	12.3	12.8	12.4
	between all tests on different days	SD	0.021	0.019	0.031	0.057	0.032
		CV %	20.5	20.1	20.9	19.4	20.2

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			87.60	86.26	85.89	86.39	
Reference Values for Evaluation			87.60	86.26	85.89	86.39	
Number Of Instruments			81	81	81	81	81
Inter-Instrument Variation	based on 30 tests	SD	0.80	0.65	0.76	0.68	0.72
		CV %	0.9	0.8	0.9	0.8	0.8
	based on 6 tests	SD	0.90	0.69	0.76	0.67	0.75
		CV %	1.0	0.8	0.9	0.8	0.9
	based on single tests	SD	0.91	0.76	0.78	0.70	0.79
		CV %	1.0	0.9	0.9	0.8	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.07	0.13	0.07	0.09	0.09
		CV %	0.1	0.1	0.1	0.1	0.1
	between single tests on one day	SD	0.10	0.16	0.08	0.11	0.11
		CV %	0.1	0.2	0.1	0.1	0.1
	between all tests on different days	SD	0.18	0.31	0.18	0.25	0.23
		CV %	0.2	0.4	0.2	0.3	0.3

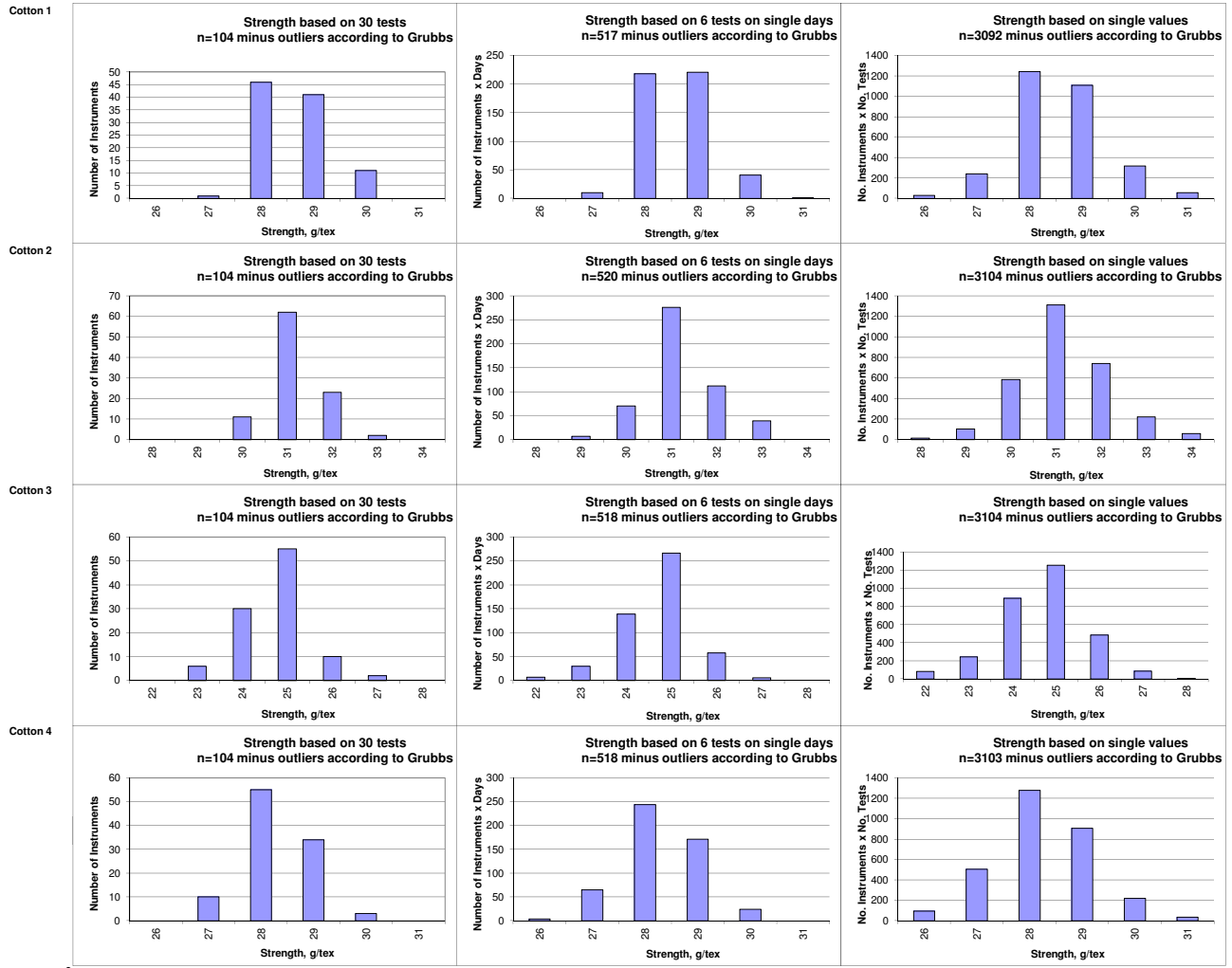
SFI							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			7.90	7.87	14.37	11.79	
Reference Values for Evaluation			7.90	7.87	14.37	11.79	
Number Of Instruments			90	90	90	90	90
Inter-Instrument Variation	based on 30 tests	SD	0.86	0.76	1.77	1.22	1.15
		CV %	10.9	9.6	12.3	10.3	10.8
	based on 6 tests	SD	0.91	0.82	1.78	1.40	1.23
		CV %	11.6	10.4	12.4	11.8	11.6
	based on single tests	SD	1.05	0.91	1.93	1.55	1.36
		CV %	13.3	11.5	13.4	13.1	12.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.20	0.18	0.46	0.40	0.31
		CV %	2.5	2.3	3.2	3.4	2.8
	between single tests on one day	SD	0.38	0.36	0.79	0.60	0.53
		CV %	4.8	4.5	5.5	5.1	5.0
	between all tests on different days	SD	0.42	0.40	0.93	0.75	0.63
		CV %	5.3	5.1	6.5	6.3	5.8

Test Result Distributions
Micronaire



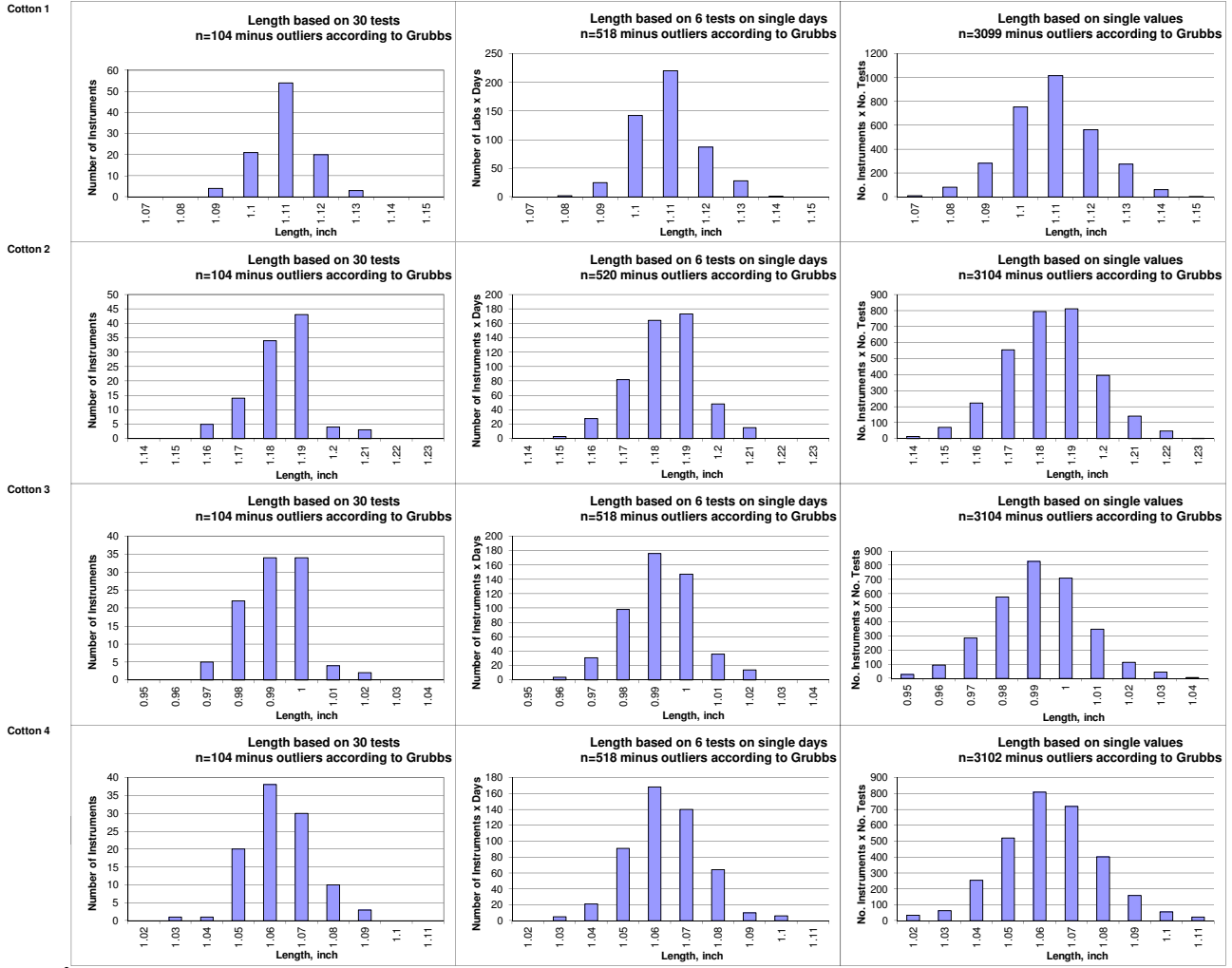
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



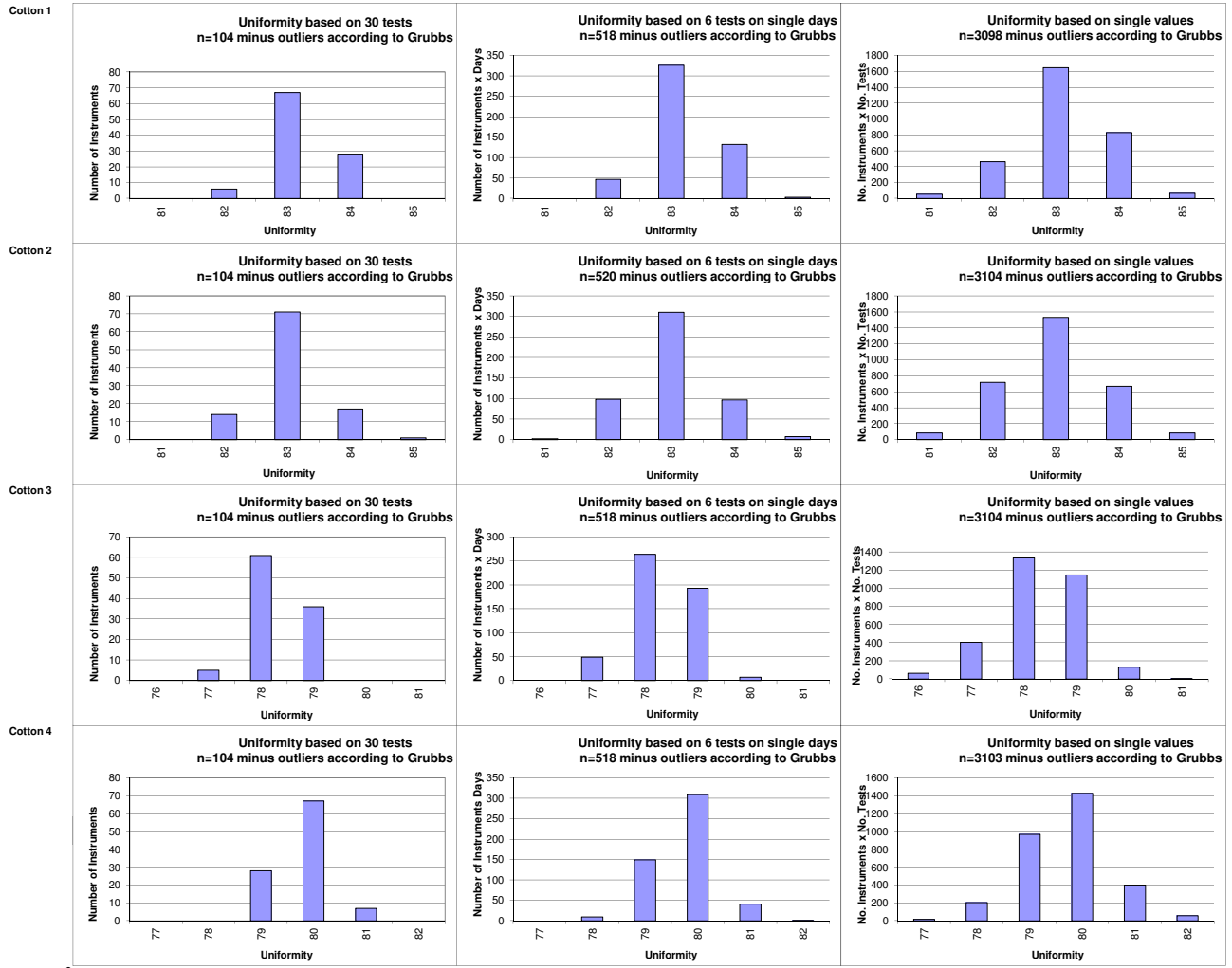
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
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Test Result Distributions
Length



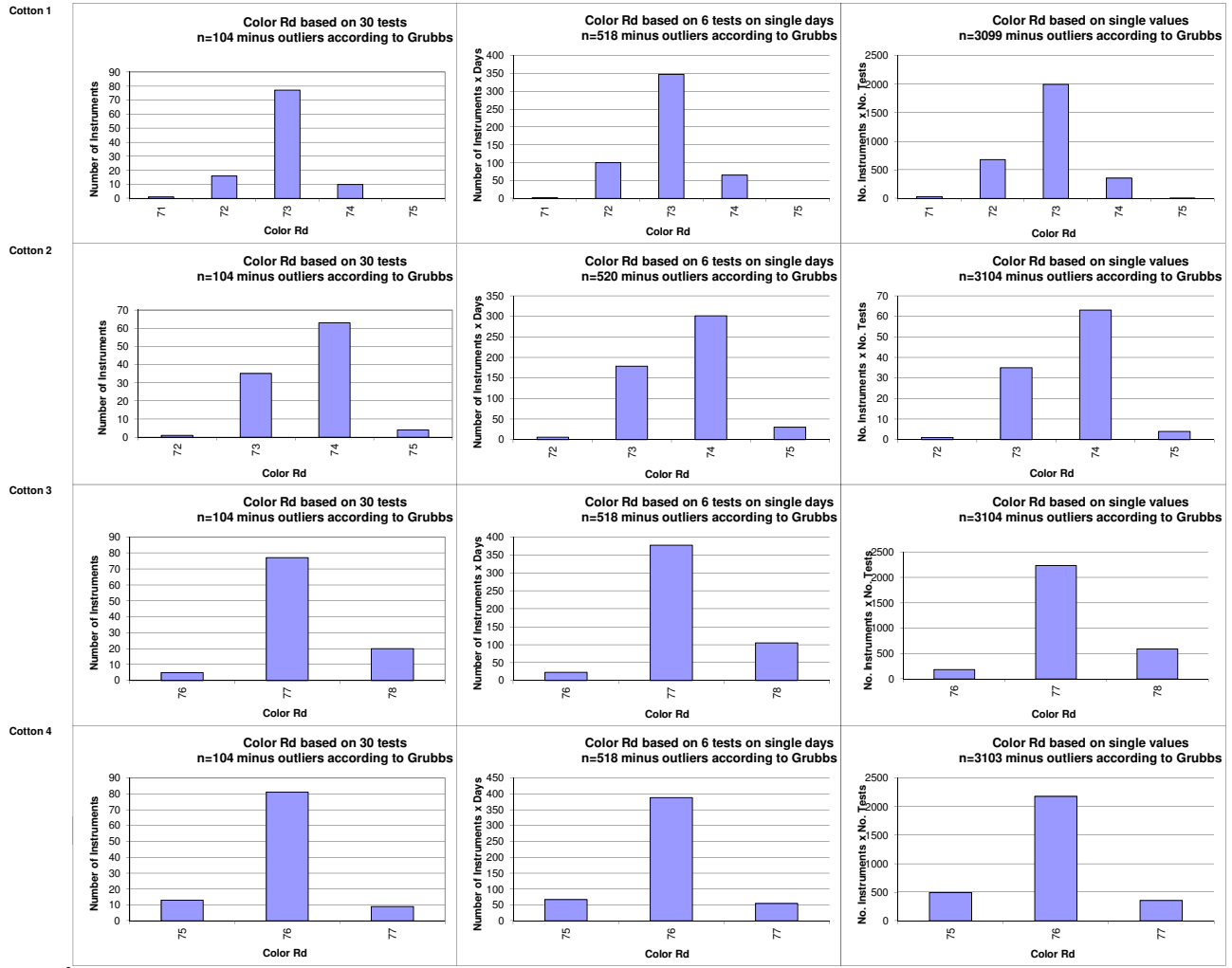
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



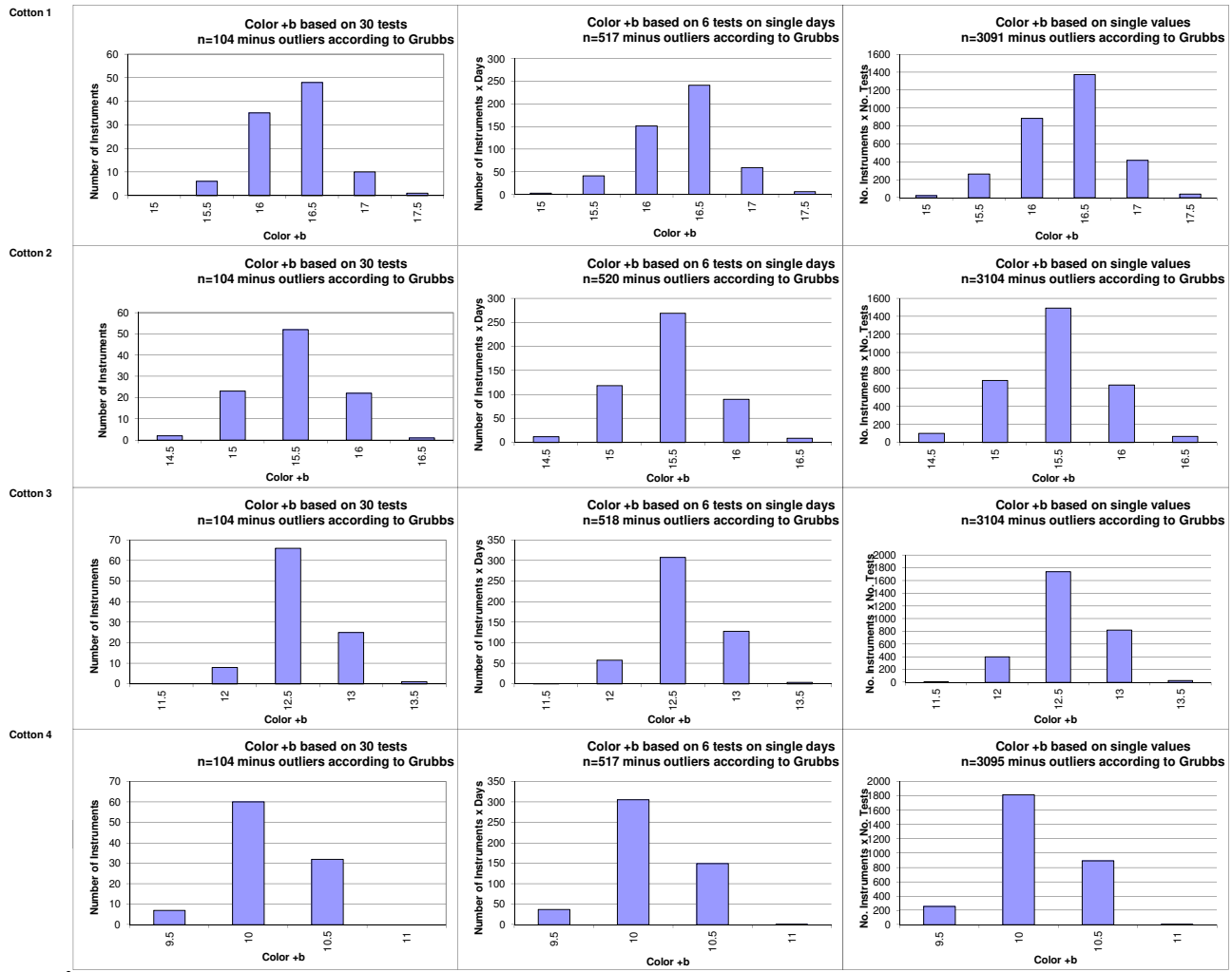
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd



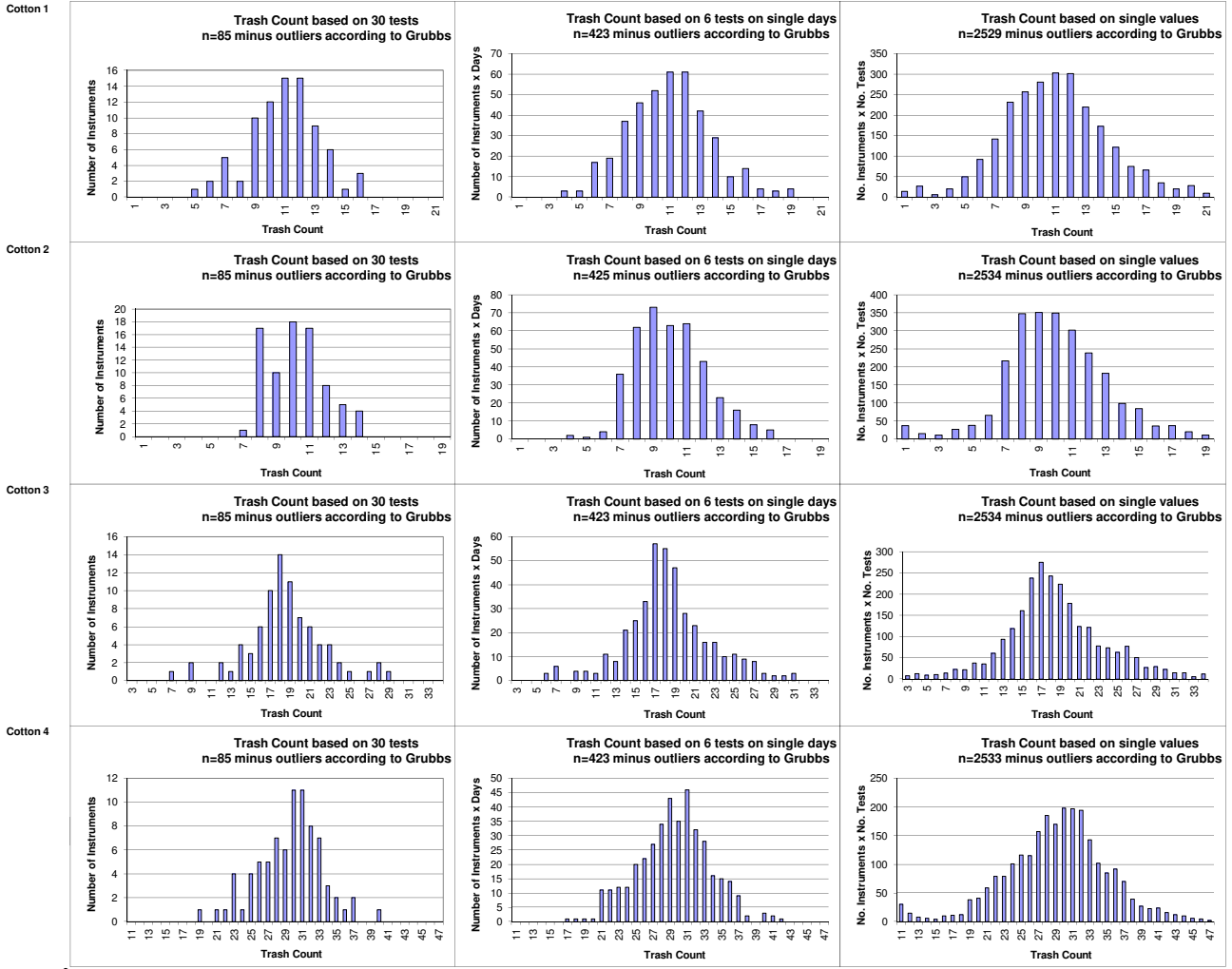
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(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b



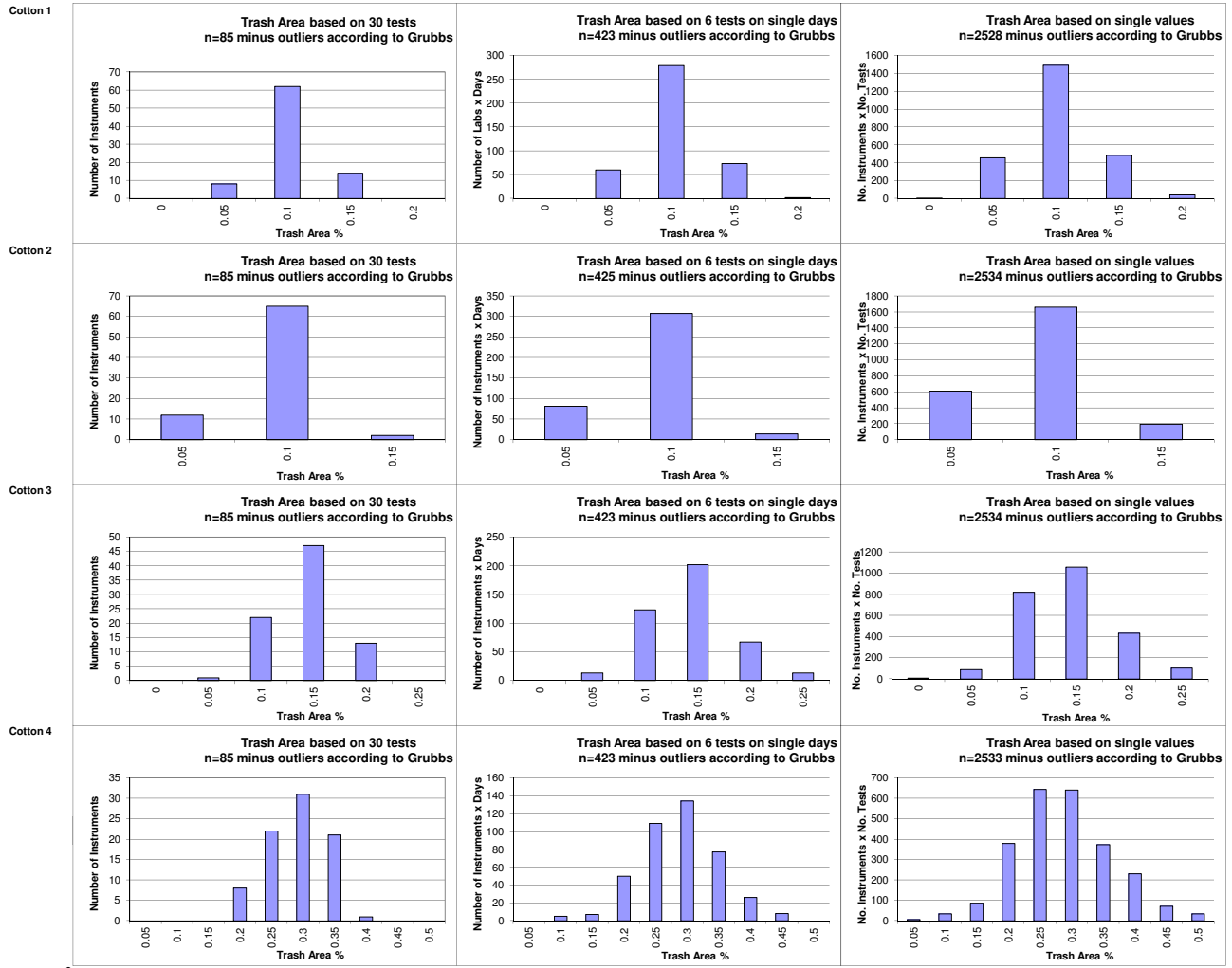
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count



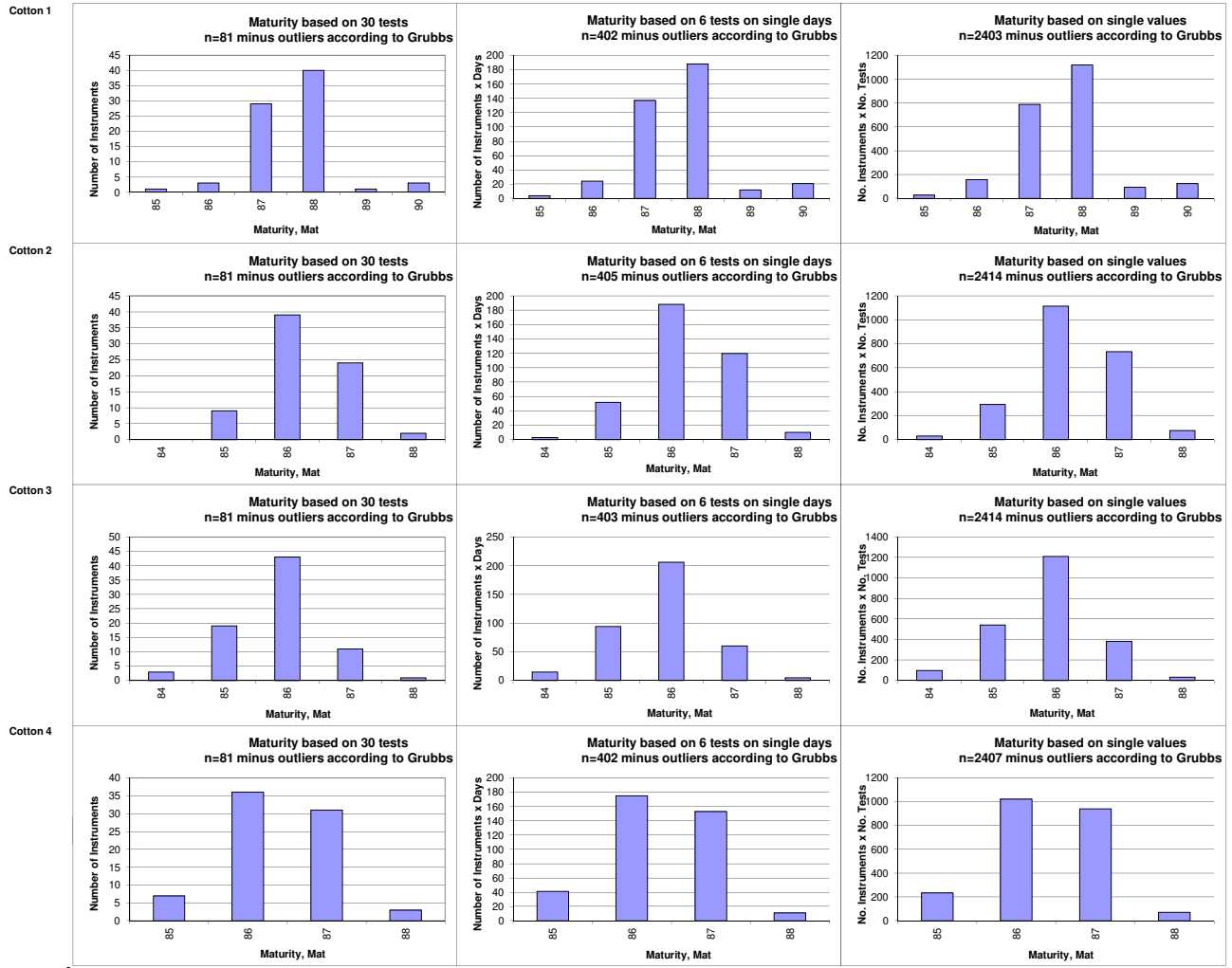
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



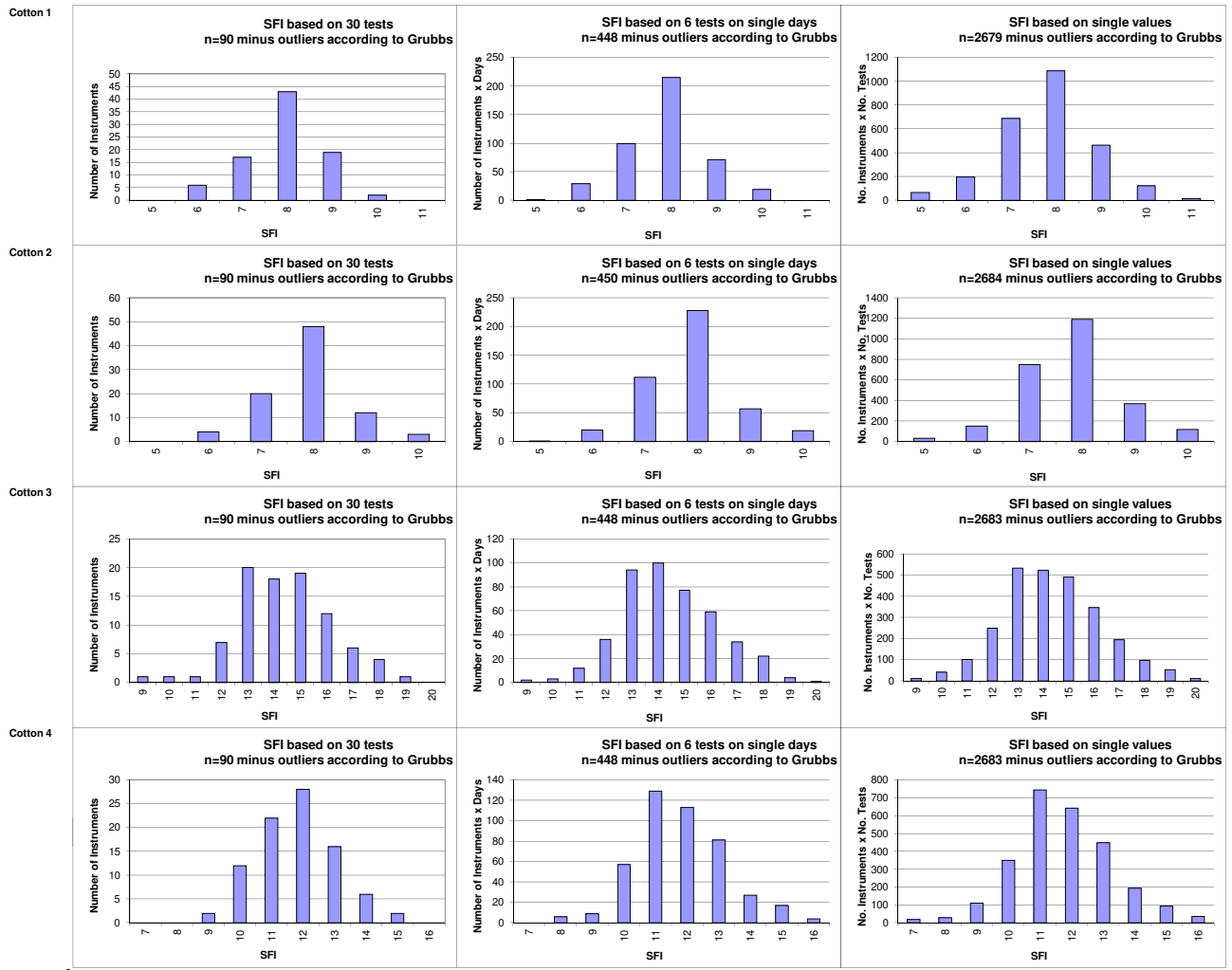
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2023 - 2 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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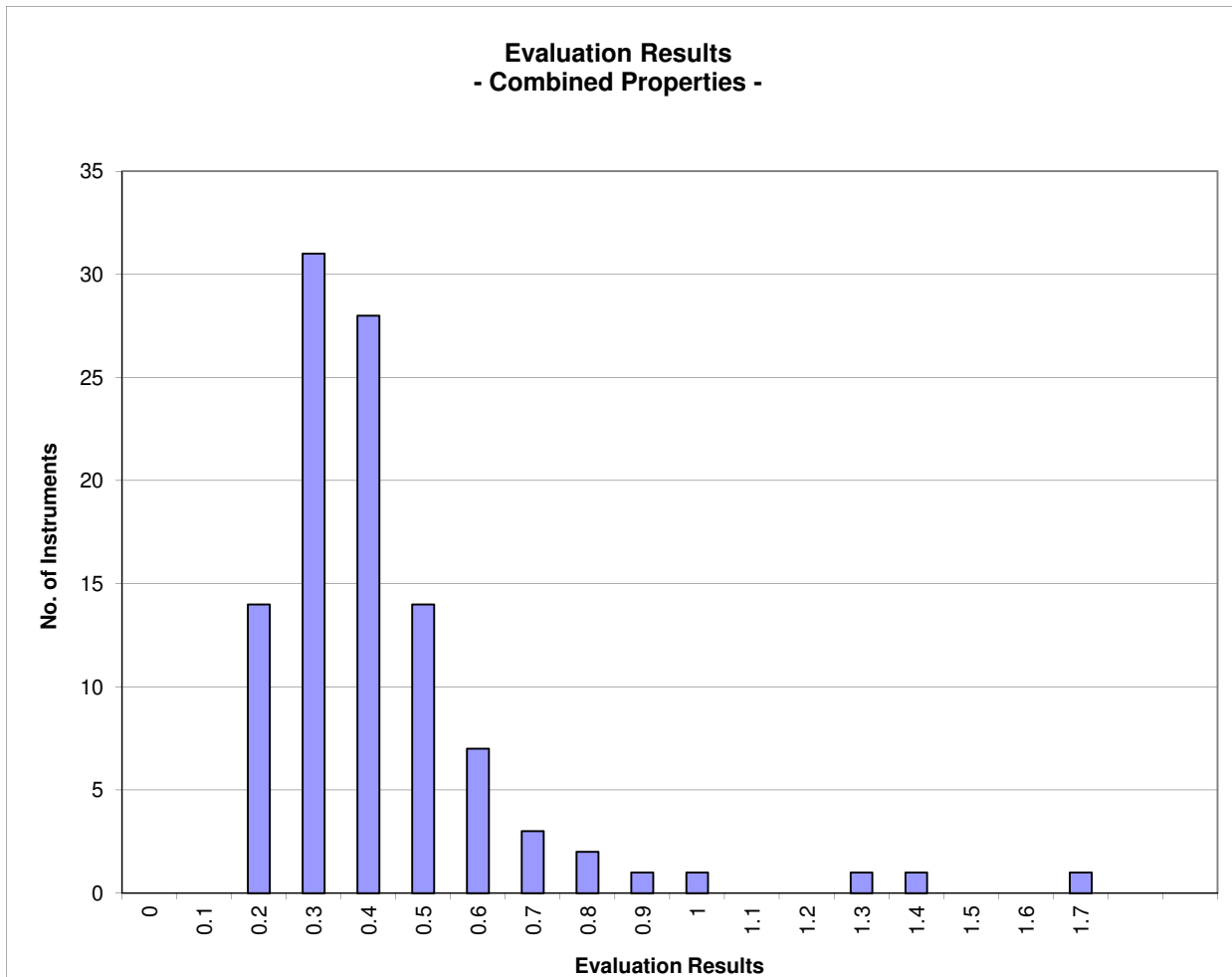
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2023 - 2

		Evaluation Combined Prop.
Statistics	Average	0.43
	Median	0.36
	Best Instrument	0.17
	Worst Instrument	1.70

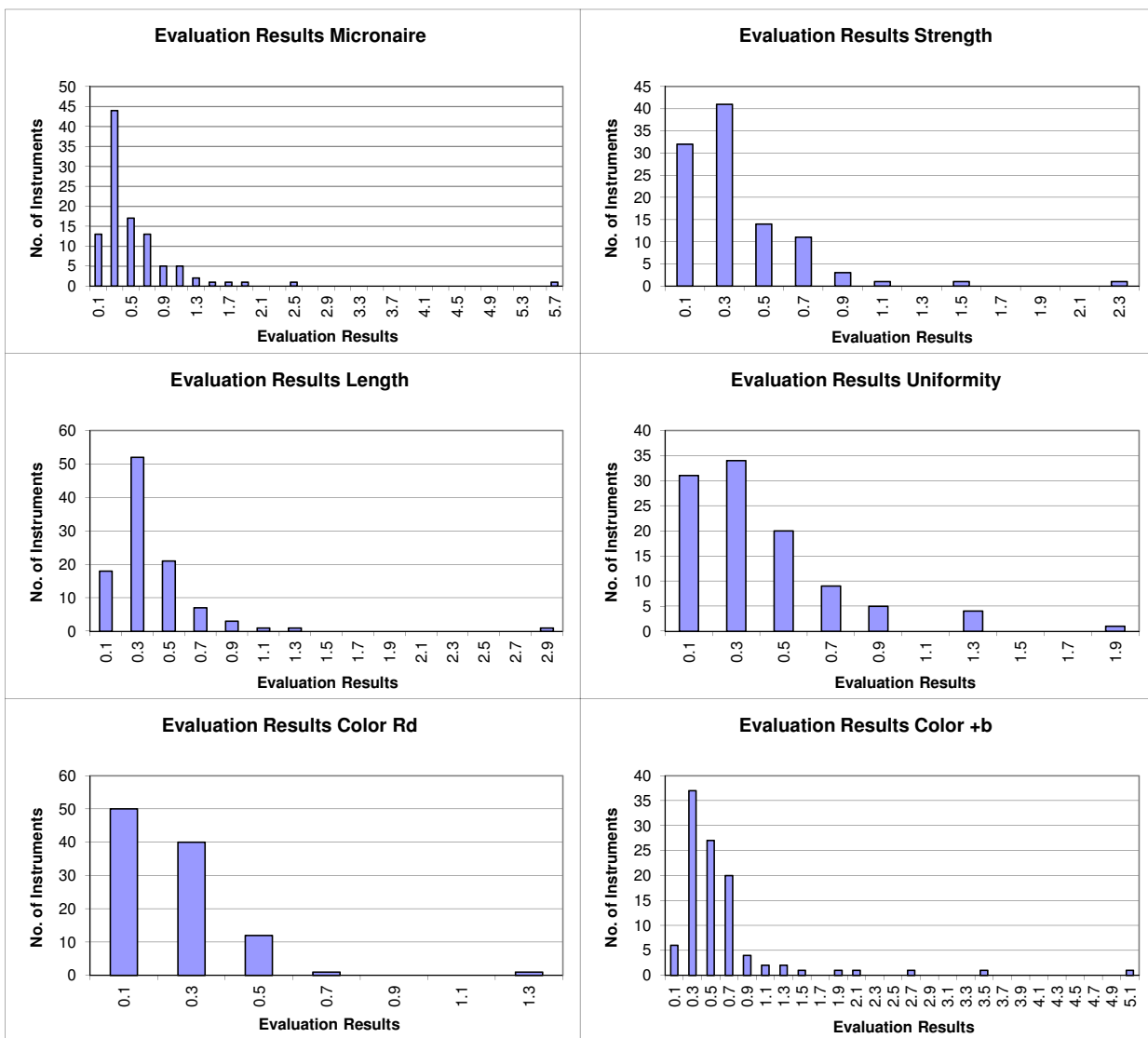


x-Axis shows midpoints of classes

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 2023 - 2

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.55	0.37	0.39	0.40	0.25	0.61
	Median	0.39	0.28	0.30	0.31	0.22	0.46
	Best Instr.	0.09	0.06	0.11	0.05	0.04	0.06
	Worst Instr.	5.71	2.27	2.81	1.98	1.37	5.05



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

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Faserinstitut Bremen e.V., Bremen, Germany*
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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	97.8	97.1	98.6	99.5	98.8	87.0
Completely within limits	95.2	92.3	97.1	98.1	98.1	71.2
% of Instruments $\geq 75\%$ within limits	98.1	98.1	99.0	100.0	99.0	88.5
% of Instruments $\geq 50\%$ within limits	99.0	99.0	99.0	100.0	99.0	92.3

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	96.2	93.2	95.8	97.9	98.2	83.6
% of Instruments 100% within limits	58.7	35.6	37.5	53.8	77.9	23.1
% of Instruments $\geq 95\%$ within limits	84.6	73.1	79.8	90.4	92.3	44.2
% of Instruments $\geq 75\%$ within limits	95.2	93.3	97.1	99.0	99.0	78.8
% of Instruments $\geq 65\%$ within limits	97.1	96.2	98.1	99.0	99.0	85.6
% of Instruments $\geq 50\%$ within limits	99.0	98.1	99.0	100.0	99.0	91.3