



International Cotton Advisory Committee



CSITC Global - Round Trial 2019 - 1 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 2019 - 1

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

Micronaire							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			4.000	4.838	4.256	3.788	
Reference Values for Evaluation			4.000	4.838	4.256	3.788	
Number Of Instruments			101	101	101	101	101
Inter-Instrument Variation	based on 30 tests	SD	0.053	0.058	0.059	0.067	0.059
		CV %	1.3	1.2	1.4	1.8	1.4
	based on 6 tests	SD	0.061	0.063	0.063	0.076	0.066
		CV %	1.5	1.3	1.5	2.0	1.6
	based on single tests	SD	0.071	0.070	0.070	0.084	0.074
		CV %	1.8	1.4	1.6	2.2	1.8
Typical within-instrument Variation (Median)	between different days	SD	0.022	0.022	0.023	0.025	0.023
	with each 6 tests	CV %	0.5	0.5	0.5	0.7	0.6
	between single tests	SD	0.030	0.029	0.030	0.037	0.031
	on one day	CV %	0.7	0.6	0.7	1.0	0.8
	between all tests	SD	0.036	0.036	0.038	0.043	0.038
	on different days	CV %	0.9	0.7	0.9	1.1	0.9

Strength							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			33.560	31.070	29.317	23.777	
Reference Values for Evaluation			33.560	31.070	29.317	23.777	
Number Of Instruments			101	101	101	101	101
Inter-Instrument Variation	based on 30 tests	SD	0.724	0.631	0.803	0.682	0.710
		CV %	2.2	2.0	2.7	2.9	2.4
	based on 6 tests	SD	0.808	0.776	0.894	0.760	0.810
		CV %	2.4	2.5	3.0	3.2	2.8
	based on single tests	SD	0.982	0.961	1.068	0.963	0.994
		CV %	2.9	3.1	3.6	4.0	3.4
Typical within-instrument Variation (Median)	between different days	SD	0.371	0.398	0.380	0.350	0.375
	with each 6 tests	CV %	1.1	1.3	1.3	1.5	1.3
	between single tests	SD	0.577	0.540	0.618	0.581	0.579
	on one day	CV %	1.7	1.7	2.1	2.4	2.0
	between all tests	SD	0.725	0.667	0.732	0.684	0.702
	on different days	CV %	2.2	2.1	2.5	2.9	2.4

Length							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			1.1932	1.1071	1.0386	0.9906	
Reference Values for Evaluation			1.1932	1.1071	1.0386	0.9906	
Number Of Instruments			102	102	102	102	102
Inter-Instrument Variation	based on 30 tests	SD	0.0083	0.0078	0.0080	0.0098	0.0085
		CV %	0.7	0.7	0.8	1.0	0.8
	based on 6 tests	SD	0.0097	0.0100	0.0099	0.0116	0.0103
		CV %	0.8	0.9	1.0	1.2	1.0
	based on single tests	SD	0.0134	0.0132	0.0143	0.0168	0.0144
		CV %	1.1	1.2	1.4	1.7	1.3
Typical within-instrument Variation (Median)	between different days	SD	0.0056	0.0057	0.0055	0.0064	0.0058
	with each 6 tests	CV %	0.5	0.5	0.5	0.6	0.5
	between single tests	SD	0.0092	0.0089	0.0103	0.0120	0.0101
	on one day	CV %	0.8	0.8	1.0	1.2	0.9
	between all tests	SD	0.0107	0.0104	0.0116	0.0136	0.0116
	on different days	CV %	0.9	0.9	1.1	1.4	1.1

Uniformity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			83.519	82.009	80.259	77.486	
Reference Values for Evaluation			83.519	82.009	80.259	77.486	
Number Of Instruments			101	101	101	101	101
Inter-Instrument Variation	based on 30 tests	SD	0.342	0.321	0.338	0.436	0.359
		CV %	0.4	0.4	0.4	0.6	0.4
	based on 6 tests	SD	0.421	0.384	0.448	0.559	0.453
		CV %	0.5	0.5	0.6	0.7	0.6
	based on single tests	SD	0.639	0.631	0.671	0.842	0.696
		CV %	0.8	0.8	0.8	1.1	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.272	0.263	0.292	0.337	0.291
		CV %	0.3	0.3	0.4	0.4	0.4
	between single tests on one day	SD	0.464	0.461	0.528	0.631	0.521
		CV %	0.6	0.6	0.7	0.8	0.6
	between all tests on different days	SD	0.531	0.539	0.586	0.716	0.593
		CV %	0.6	0.7	0.7	0.9	0.7

Color Rd							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			74.927	80.652	77.750	74.974	
Reference Values for Evaluation			74.927	80.652	77.750	74.974	
Number Of Instruments			98	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.456	0.580	0.488	0.546	0.517
		CV %	0.6	0.7	0.6	0.7	0.7
	based on 6 tests	SD	0.504	0.567	0.545	0.628	0.561
		CV %	0.7	0.7	0.7	0.8	0.7
	based on single tests	SD	0.555	0.618	0.622	0.684	0.620
		CV %	0.7	0.8	0.8	0.9	0.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.153	0.147	0.149	0.161	0.153
		CV %	0.2	0.2	0.2	0.2	0.2
	between single tests on one day	SD	0.139	0.125	0.138	0.151	0.138
		CV %	0.2	0.2	0.2	0.2	0.2
	between all tests on different days	SD	0.222	0.225	0.218	0.231	0.224
		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)			13.410	11.215	11.867	14.350	
Reference Values for Evaluation			13.410	11.215	11.867	14.350	
Number Of Instruments			98	98	98	98	98
Inter-Instrument Variation	based on 30 tests	SD	0.255	0.285	0.279	0.329	0.287
		CV %	1.9	2.5	2.4	2.3	2.3
	based on 6 tests	SD	0.303	0.307	0.306	0.348	0.316
		CV %	2.3	2.7	2.6	2.4	2.5
	based on single tests	SD	0.334	0.319	0.334	0.367	0.339
		CV %	2.5	2.8	2.8	2.6	2.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.100	0.094	0.108	0.121	0.106
		CV %	0.7	0.8	0.9	0.8	0.8
	between single tests on one day	SD	0.092	0.076	0.092	0.107	0.092
		CV %	0.7	0.7	0.8	0.7	0.7
	between all tests on different days	SD	0.159	0.135	0.148	0.182	0.156
		CV %	1.2	1.2	1.2	1.3	1.2

Optional Parameters

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

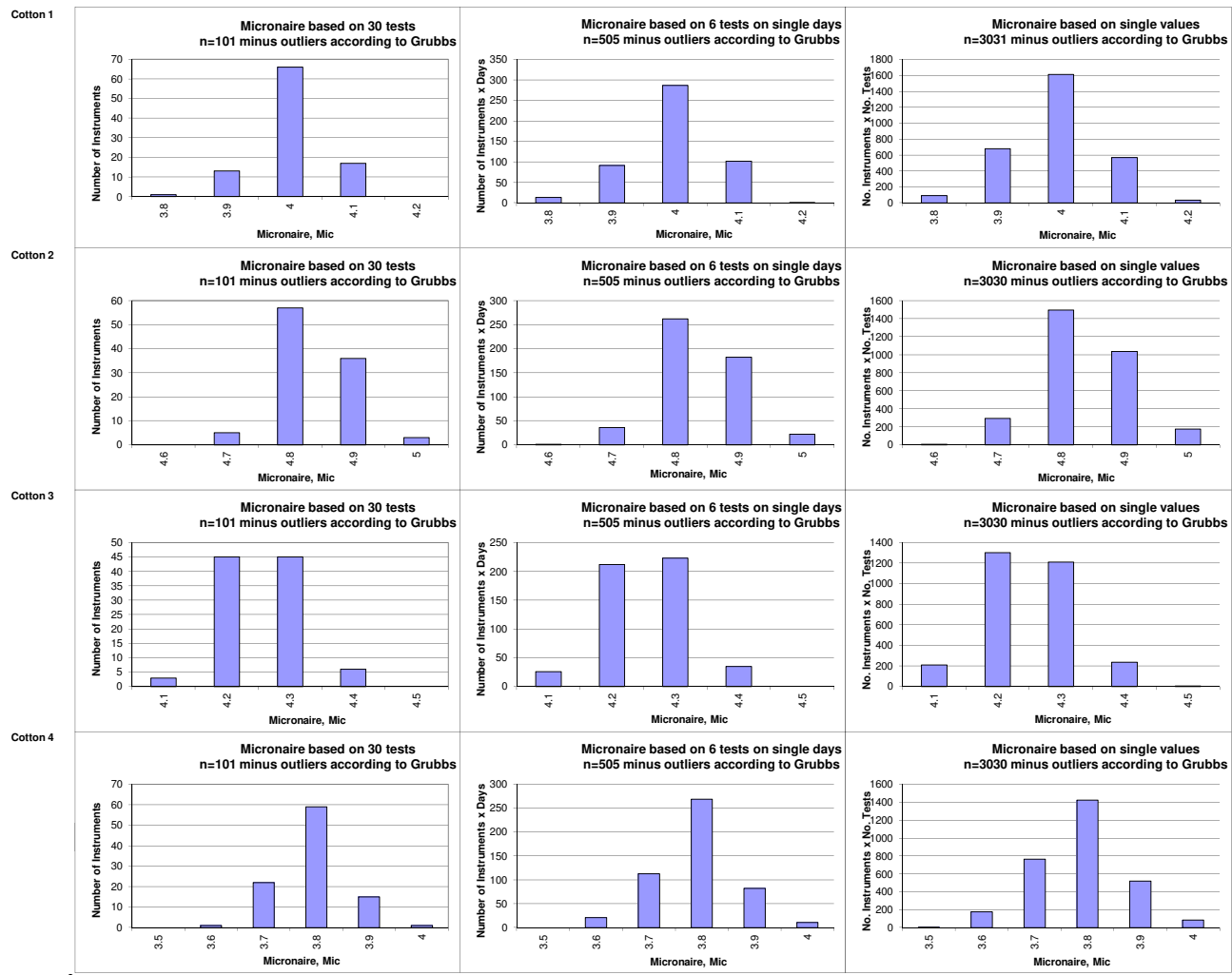
Trash Count							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			32.12	11.43	20.04	18.04	
Reference Values for Evaluation			32.12	11.43	20.04	18.04	
Number Of Instruments			71	71	71	71	71
Inter-Instrument Variation	based on 30 tests	SD	6.11	3.14	4.18	3.86	4.33
		CV %	19.0	27.5	20.9	21.4	22.2
	based on 6 tests	SD	6.80	3.92	4.81	4.16	4.92
		CV %	21.2	34.3	24.0	23.1	25.6
	based on single tests	SD	7.57	4.32	6.43	4.84	5.79
		CV %	23.6	37.8	32.1	26.9	30.1
Typical within-instrument Variation (Median)	between different days	SD	2.23	1.31	1.85	1.84	1.81
	with each 6 tests	CV %	7.0	11.4	9.2	10.2	9.4
	between single tests	SD	3.32	1.76	2.54	2.37	2.50
	on one day	CV %	10.3	15.4	12.7	13.1	12.9
	between all tests	SD	4.04	2.26	3.11	3.06	3.12
	on different days	CV %	12.6	19.8	15.5	17.0	16.2

Trash Area							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.277	0.098	0.196	0.158	
Reference Values for Evaluation			0.277	0.098	0.196	0.158	
Number Of Instruments			71	71	71	71	71
Inter-Instrument Variation	based on 30 tests	SD	0.055	0.018	0.036	0.023	0.033
		CV %	19.9	18.7	18.5	14.7	17.9
	based on 6 tests	SD	0.058	0.020	0.044	0.034	0.039
		CV %	21.1	20.3	22.5	21.5	21.4
	based on single tests	SD	0.088	0.031	0.065	0.050	0.058
		CV %	31.8	31.2	33.1	31.7	32.0
Typical within-instrument Variation (Median)	between different days	SD	0.023	0.011	0.022	0.022	0.019
	with each 6 tests	CV %	8.4	11.3	11.1	13.6	11.1
	between single tests	SD	0.036	0.016	0.030	0.024	0.027
	on one day	CV %	13.1	16.7	15.3	15.4	15.1
	between all tests	SD	0.046	0.021	0.041	0.035	0.036
	on different days	CV %	16.6	20.9	20.6	22.2	20.1

Maturity							
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			85.69	86.85	85.85	84.75	
Reference Values for Evaluation			85.69	86.85	85.85	84.75	
Number Of Instruments			65	65	65	65	65
Inter-Instrument Variation	based on 30 tests	SD	0.97	0.95	0.86	0.93	0.93
		CV %	1.1	1.1	1.0	1.1	1.1
	based on 6 tests	SD	0.94	0.91	0.84	0.88	0.89
		CV %	1.1	1.0	1.0	1.0	1.0
	based on single tests	SD	0.99	1.05	0.96	0.96	0.99
		CV %	1.2	1.2	1.1	1.1	1.2
Typical within-instrument Variation (Median)	between different days	SD	0.09	0.09	0.12	0.14	0.11
	with each 6 tests	CV %	0.1	0.1	0.1	0.2	0.1
	between single tests	SD	0.13	0.16	0.18	0.17	0.16
	on one day	CV %	0.2	0.2	0.2	0.2	0.2
	between all tests	SD	0.25	0.25	0.38	0.31	0.30
	on different days	CV %	0.3	0.3	0.4	0.4	0.3

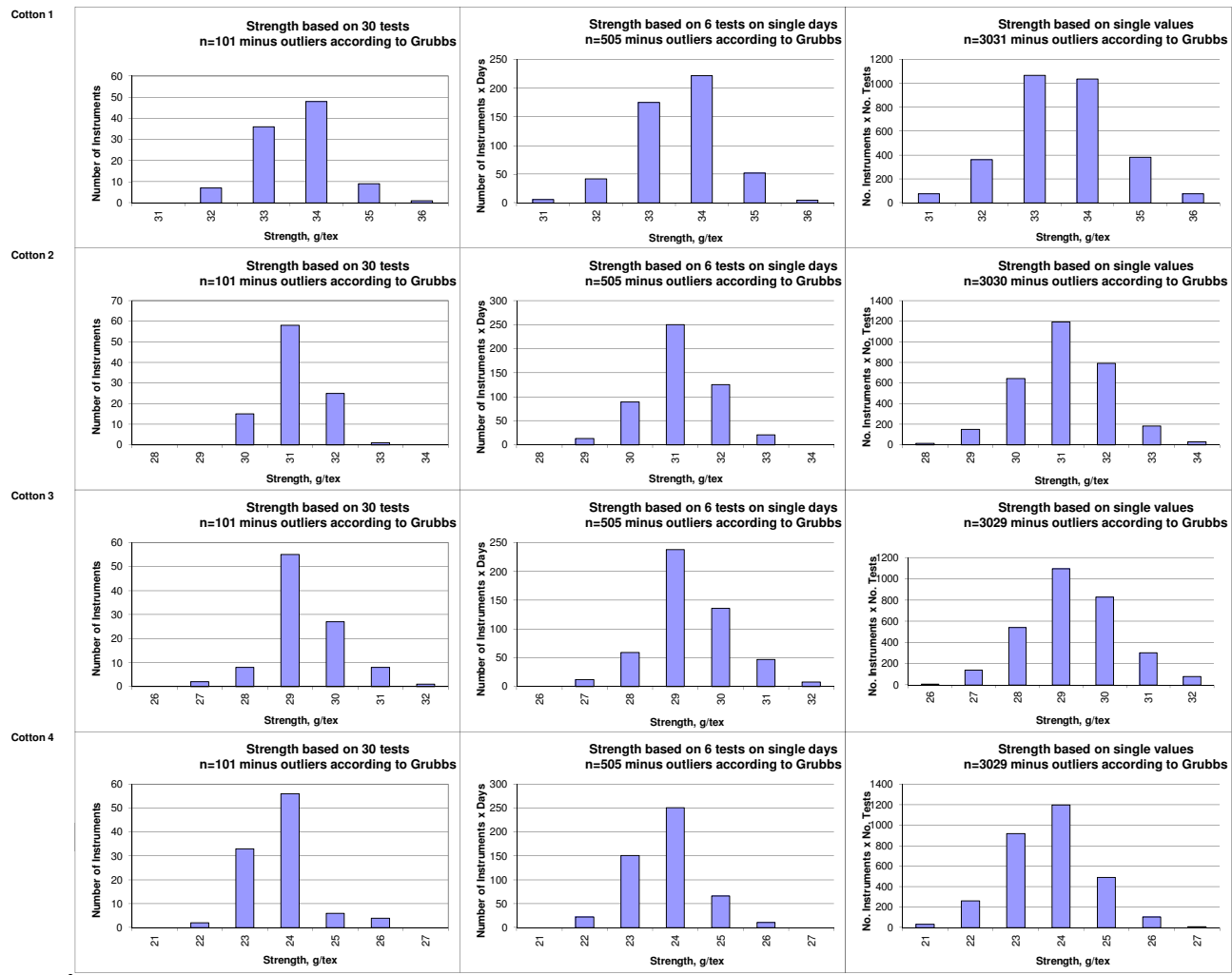
SFI						
			Cotton 1	Cotton 2	Cotton 3	Cotton 4
Average of Instruments (Grubbs)			7.70	9.27	11.32	15.55
Reference Values for Evaluation			7.70	9.27	11.32	15.55
Number Of Instruments			74	74	74	74
Inter-Instrument Variation	based on 30 tests	SD	0.62	0.72	1.17	1.95
		CV %	8.0	7.8	10.3	12.6
	based on 6 tests	SD	0.64	0.69	1.03	1.96
		CV %	8.3	7.5	9.1	12.6
	based on single tests	SD	0.70	0.83	1.24	2.13
		CV %	9.1	9.0	11.0	13.7
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.18	0.25	0.35	0.50
		CV %	2.4	2.7	3.1	3.2
	between single tests on one day	SD	0.32	0.43	0.56	0.88
		CV %	4.1	4.6	4.9	5.6
	between all tests on different days	SD	0.37	0.47	0.65	0.97
		CV %	4.8	5.0	5.7	6.2

Test Result Distributions
Micronaire



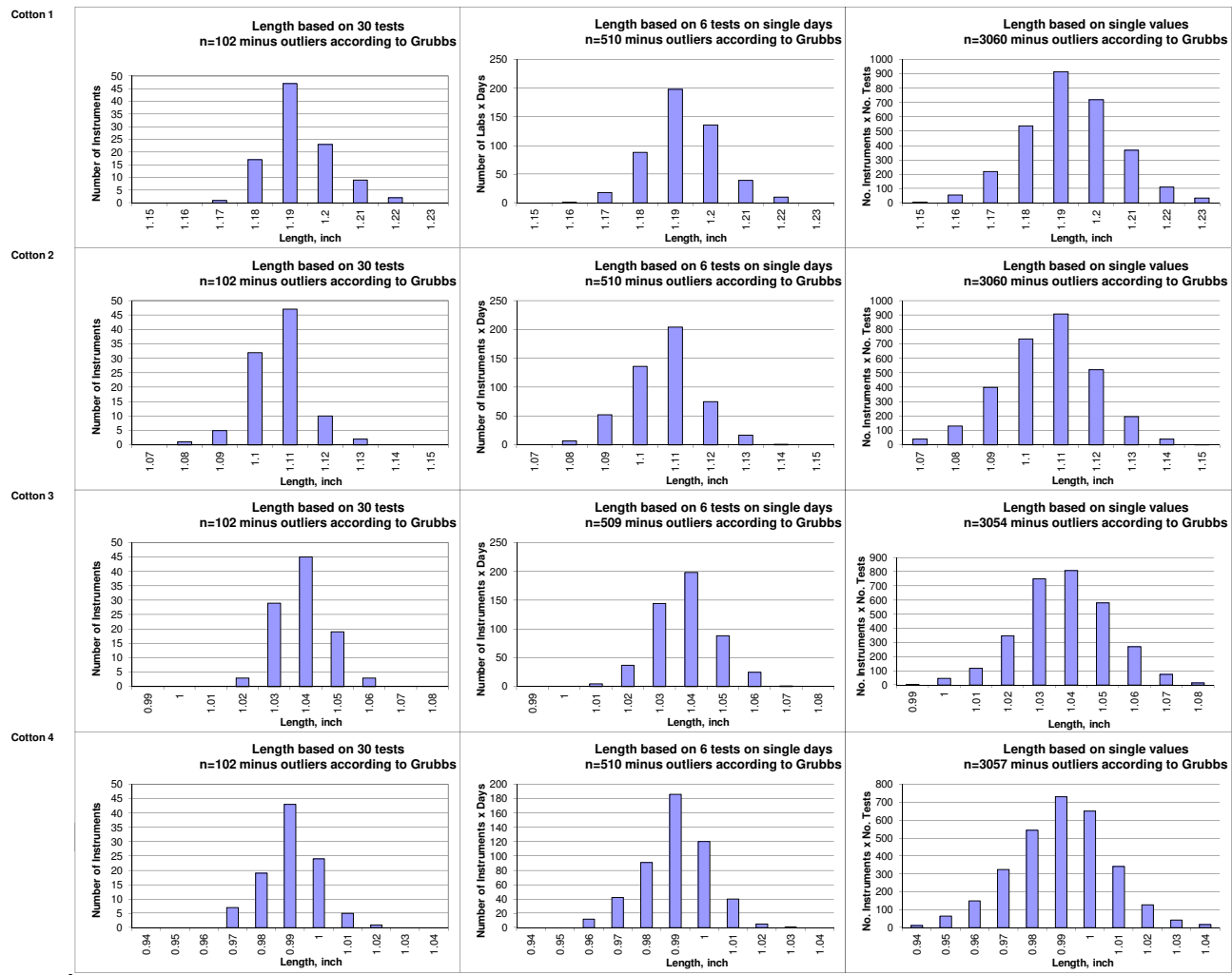
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Strength



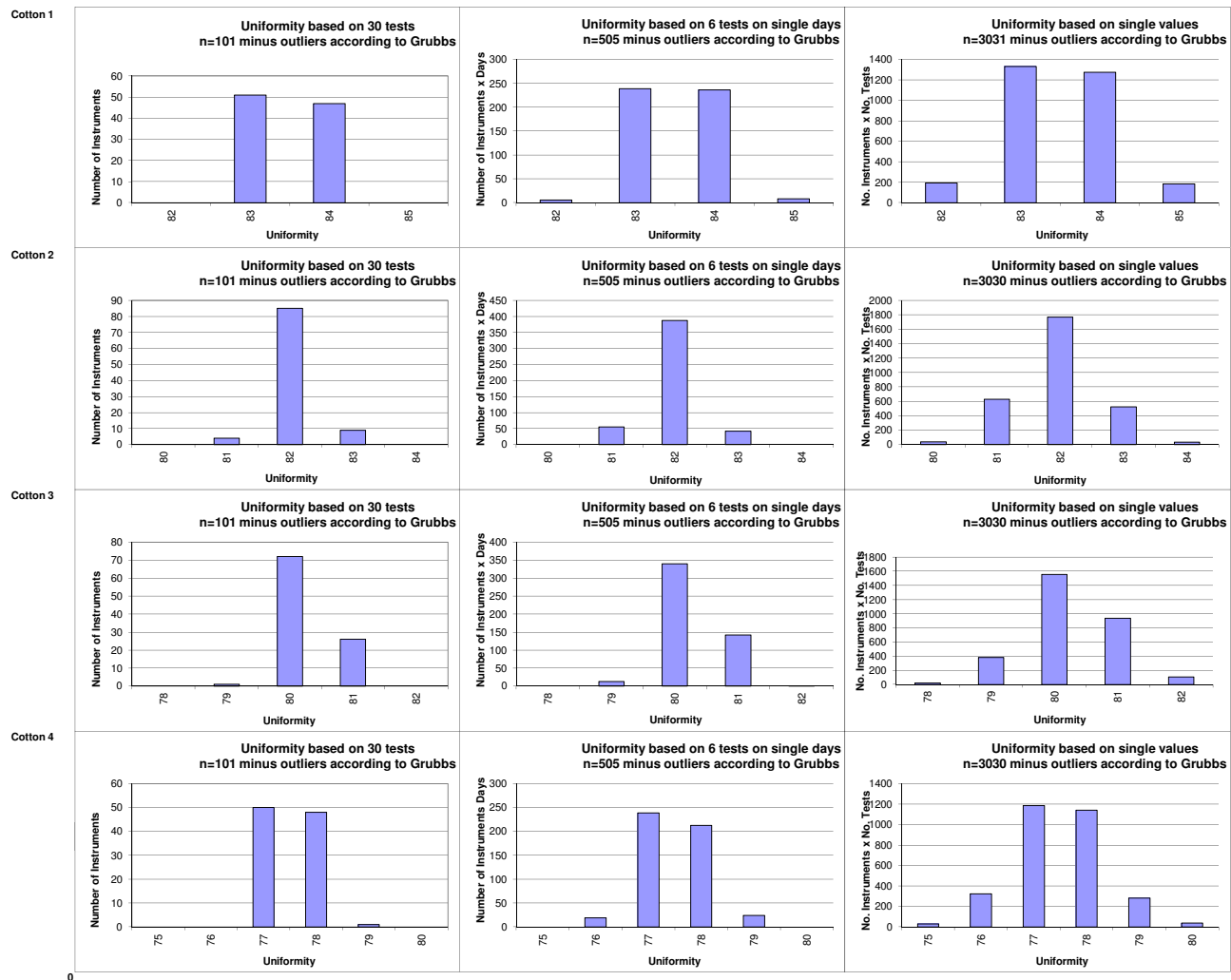
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Length



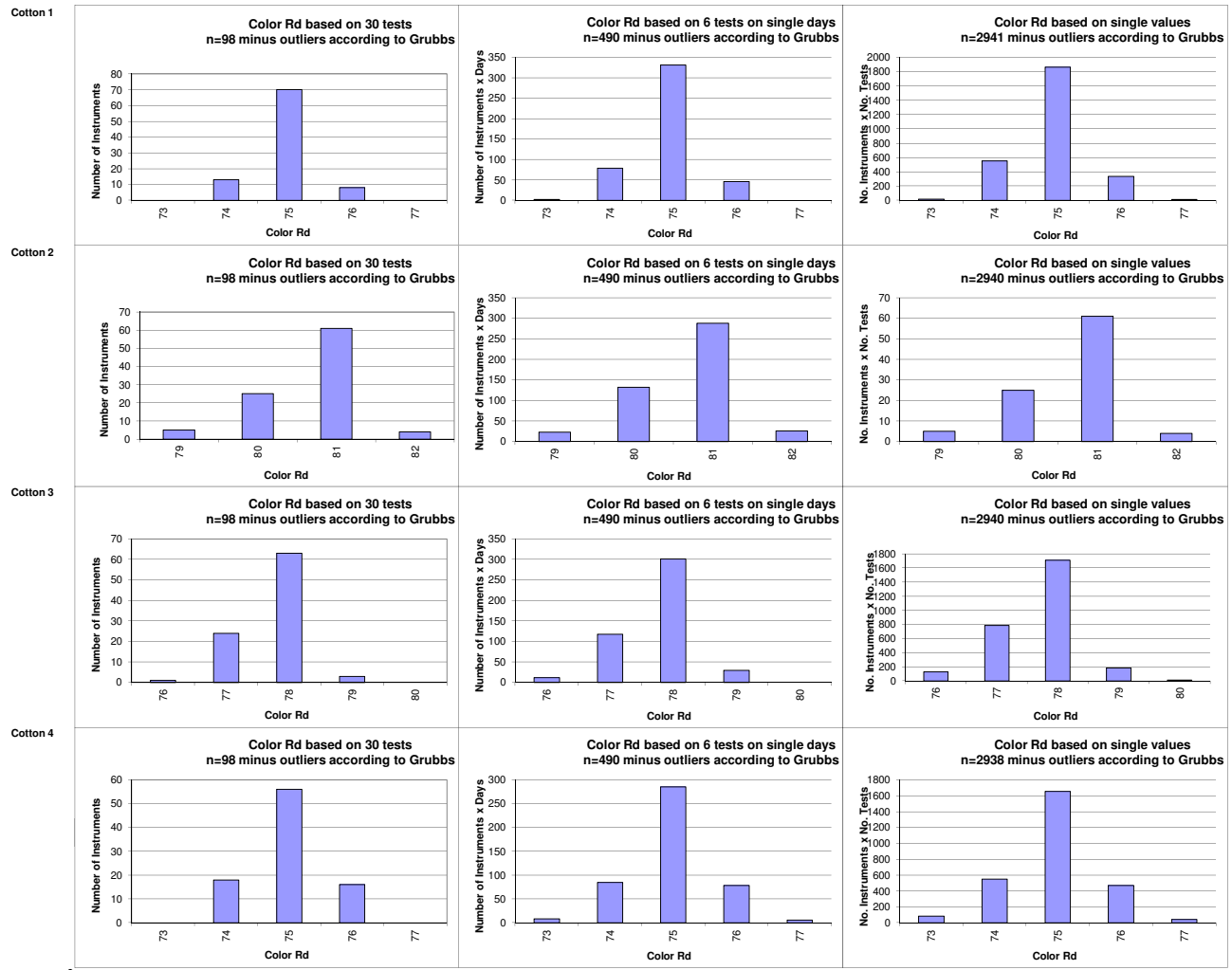
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Uniformity



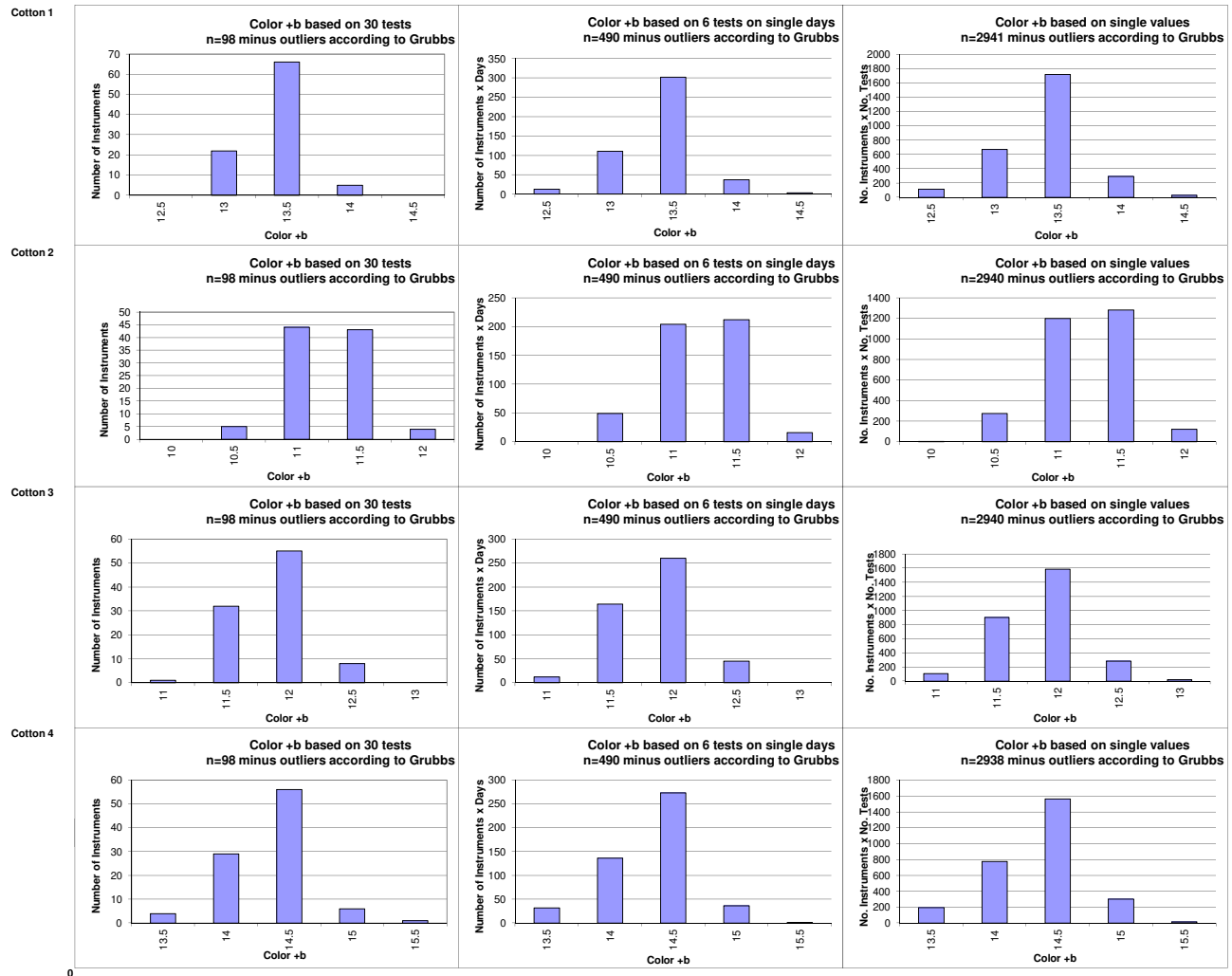
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color Rd

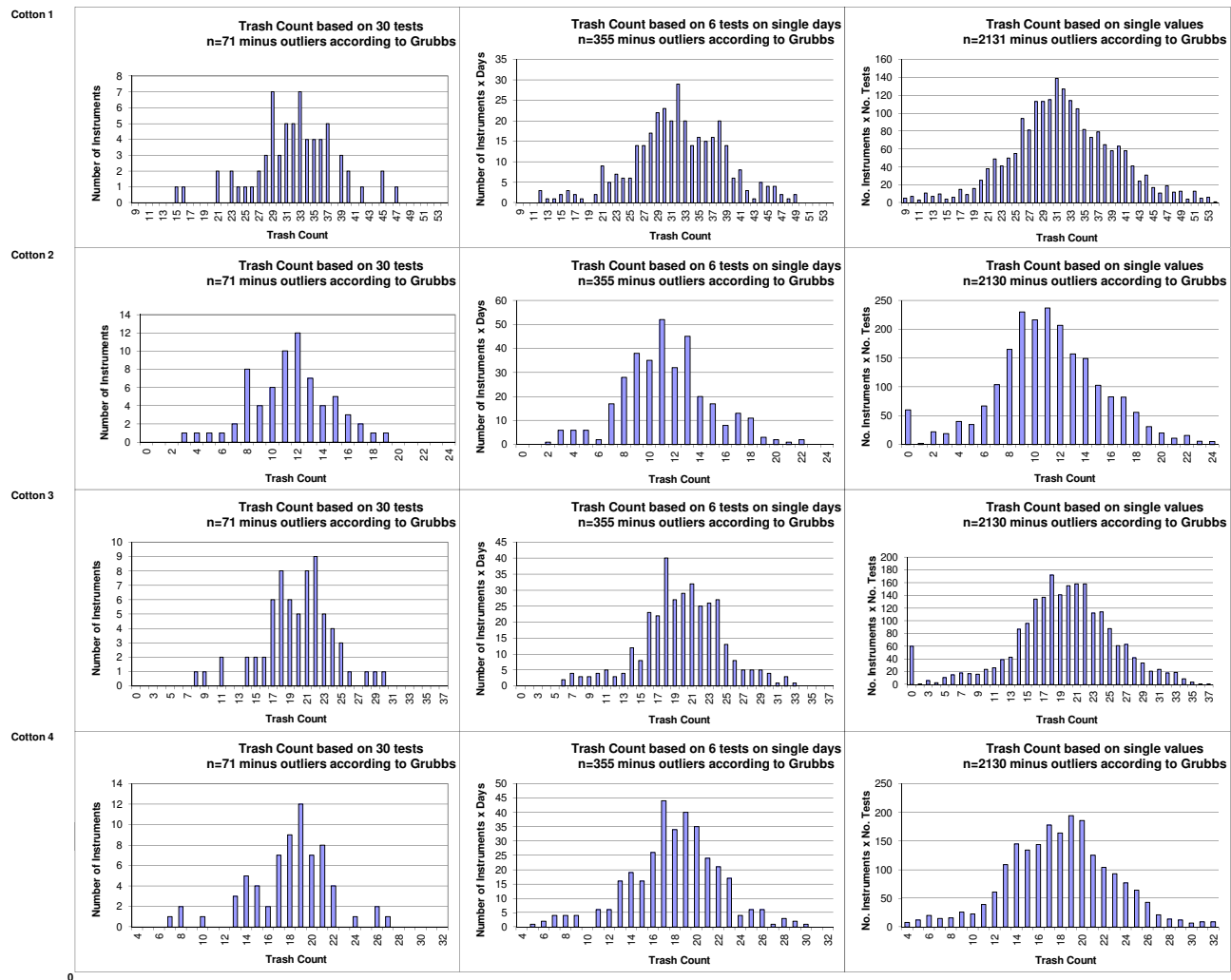


(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Color +b

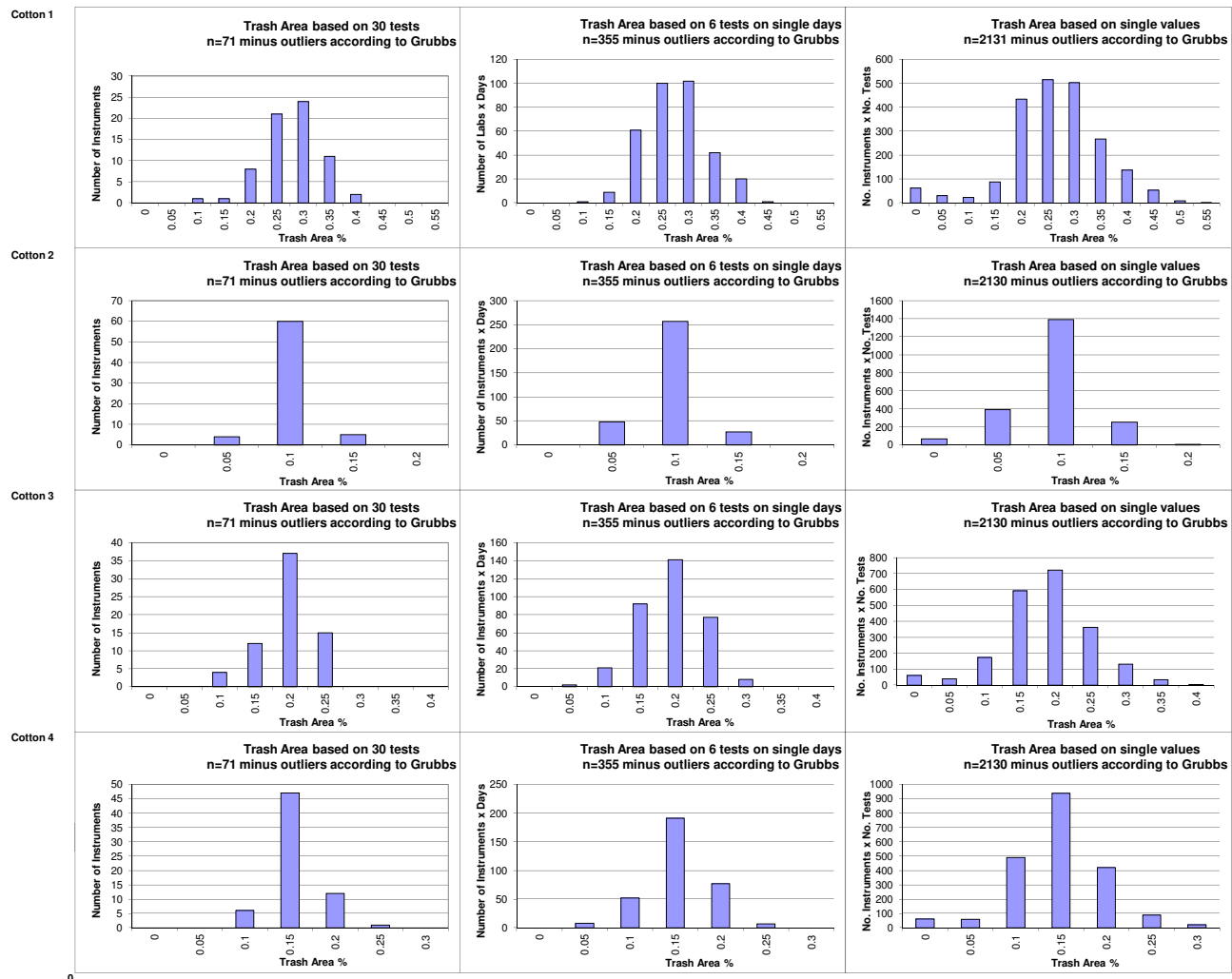


(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Count

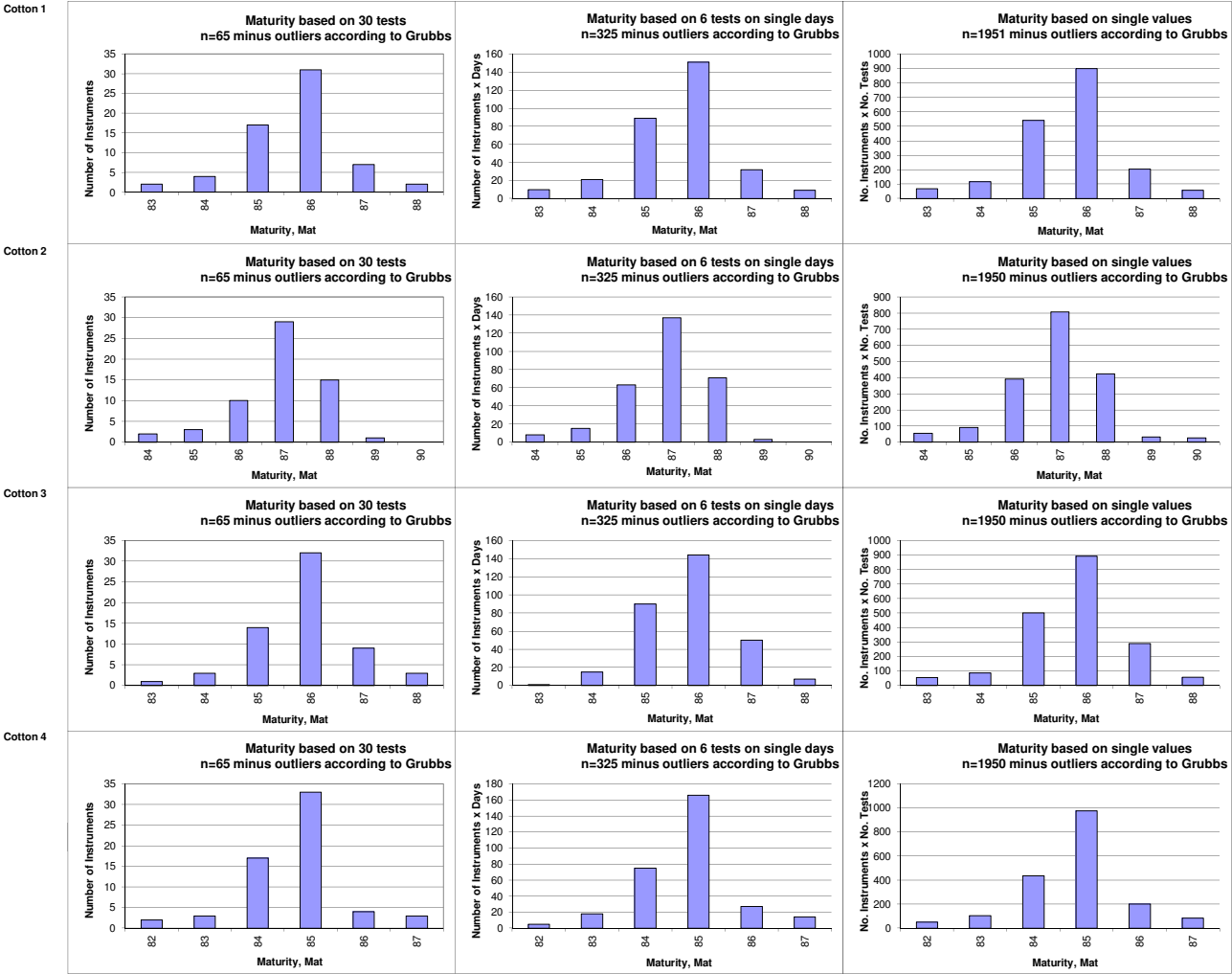
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions
Trash Area



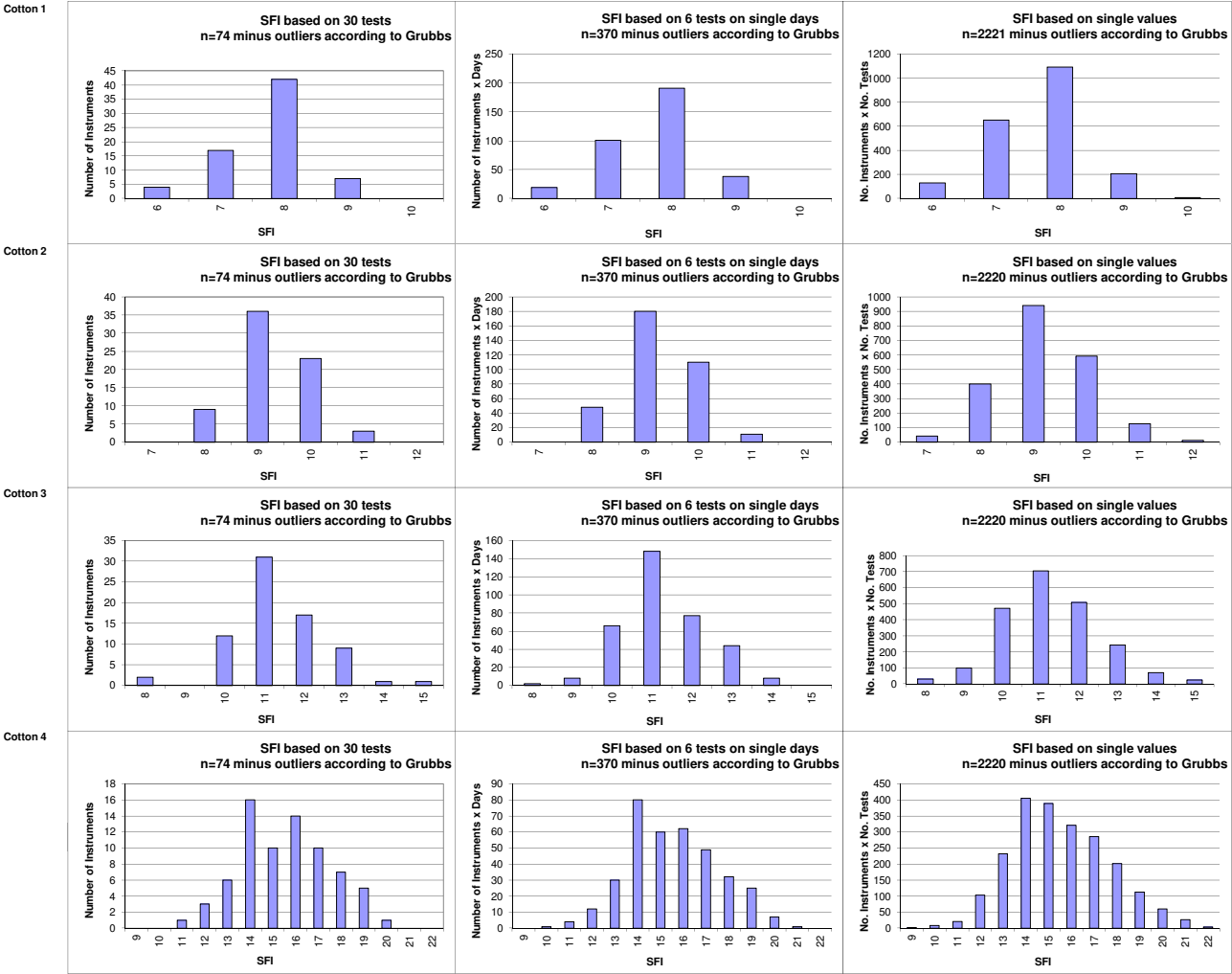
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)
(classes are defined as > lower limit and <= upper limit)

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 2019 - 1 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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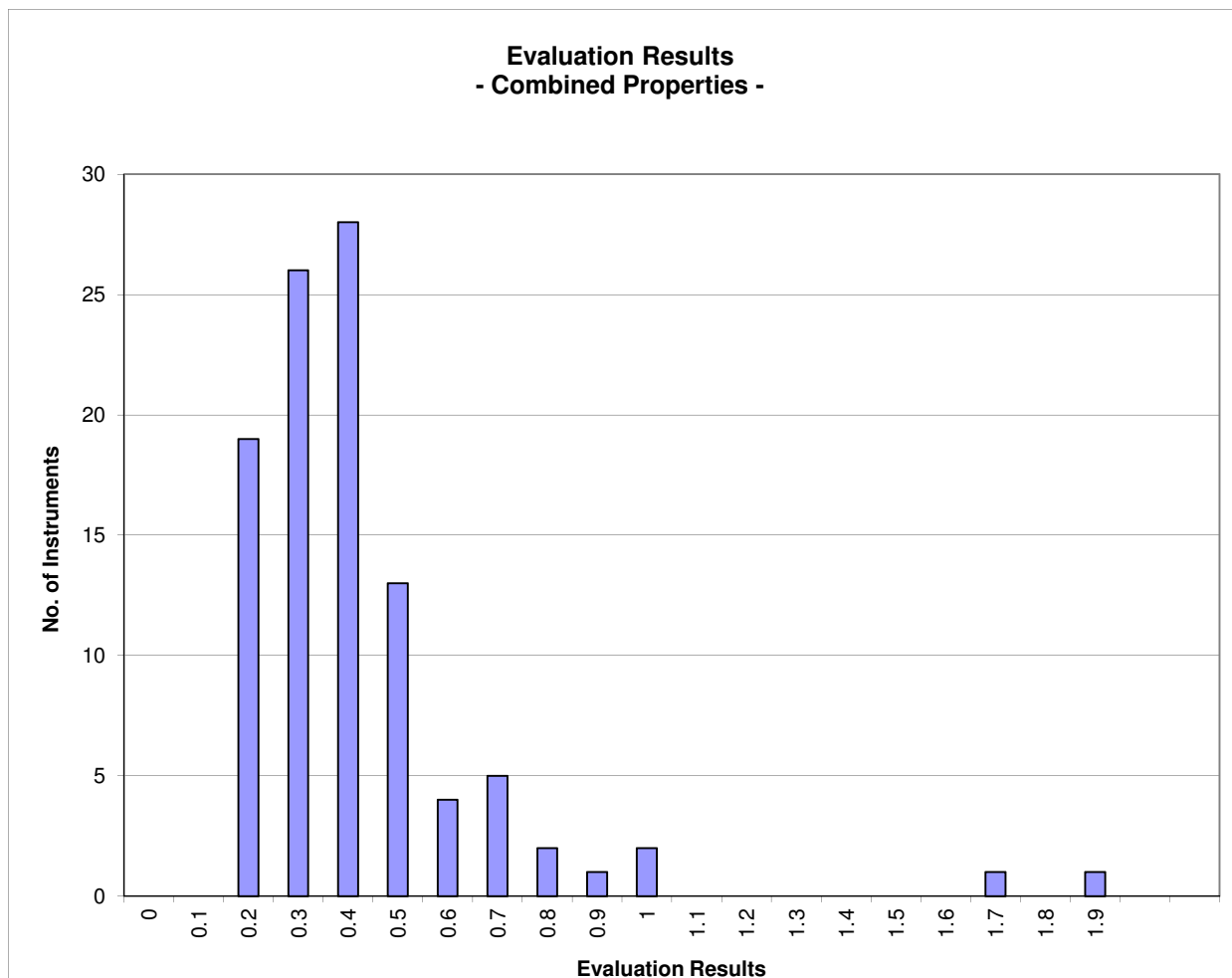
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2019 - 1

		Evaluation Combined Prop.
Statistics	Average	0.42
	Median	0.35
	Best Instrument	0.15
	Worst Instrument	1.93



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)

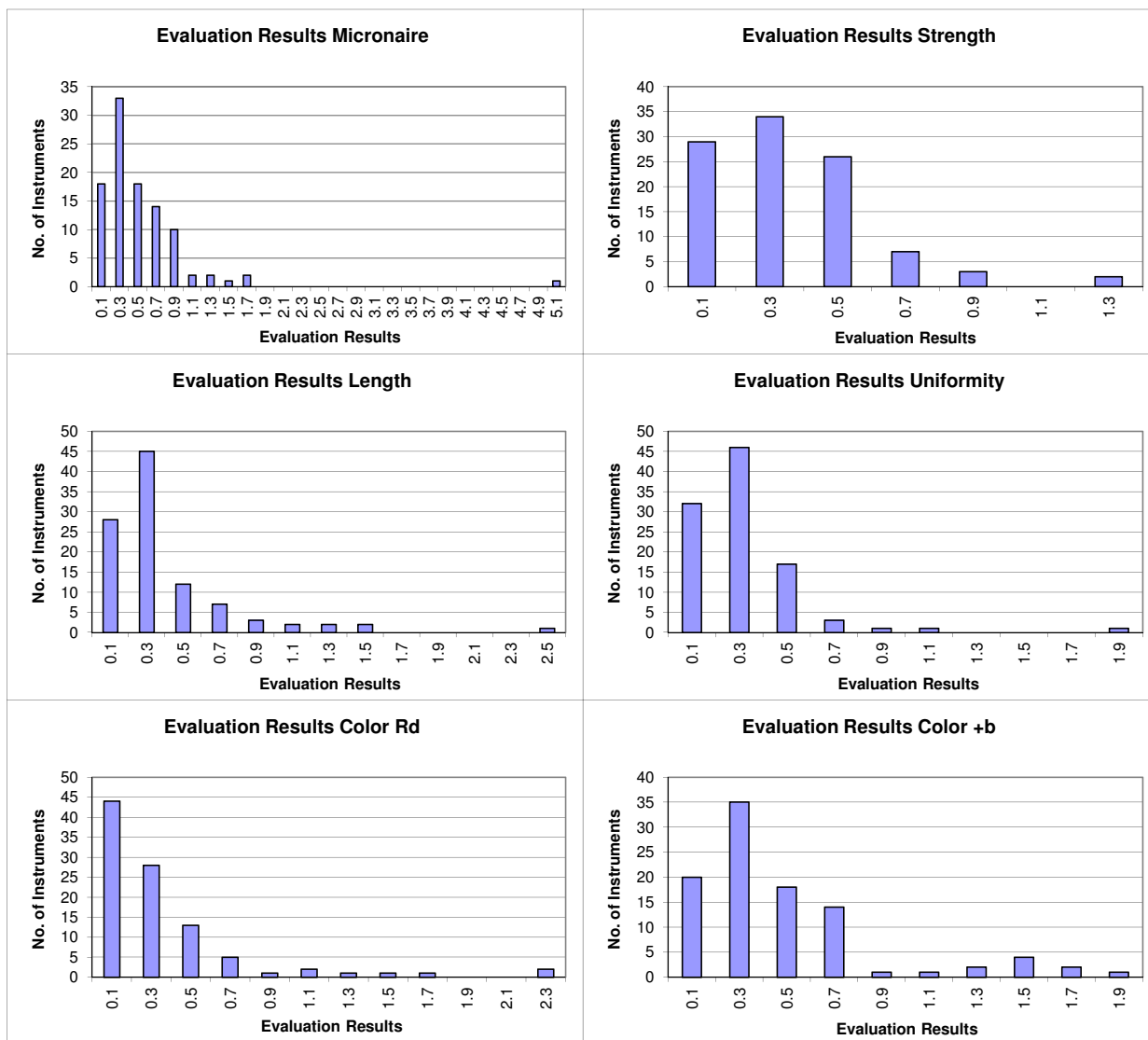
Instrument Evaluation

- Graph of Single Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2019 - 1

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
Statistics	Average	0.54	0.36	0.40	0.31	0.36	0.49
	Median	0.40	0.29	0.30	0.26	0.22	0.37
	Best Instr.	0.04	0.05	0.06	0.04	0.07	0.10
	Worst Instr.	5.03	1.32	2.53	1.87	2.38	1.99



x-Axis shows midpoints of classes

The evaluation results are entered based on the unrounded values



International Cotton Advisory Committee



CSITC Global - Round Trial 2019 - 1 General Evaluation

Section One: Result Distribution
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	98.5	98.8	97.3	100.0	92.9	89.3
Completely within limits	96.0	96.0	93.1	100.0	90.8	81.6
% of Instruments $\geq 75\%$ within limits	99.0	99.0	97.1	100.0	92.9	88.8
% of Instruments $\geq 50\%$ within limits	99.0	100.0	99.0	100.0	92.9	92.9

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	94.0	95.5	98.3	92.7	83.8
% of Instruments 100% within limits	63.4	18.8	33.3	51.5	71.4	24.5
% of Instruments $\geq 95\%$ within limits	91.1	73.3	82.4	93.1	84.7	52.0
% of Instruments $\geq 75\%$ within limits	99.0	96.0	94.1	99.0	91.8	78.6
% of Instruments $\geq 65\%$ within limits	99.0	98.0	95.1	99.0	92.9	86.7
% of Instruments $\geq 50\%$ within limits	99.0	99.0	99.0	100.0	92.9	88.8