

# DEVELOPMENT OF THE INTERNATIONAL ROUND TRIAL SYSTEM

## CHAPTER 3.1

### ANNEX A: GENERAL EVALUATION

#### Project CFC/ICAC/33

#### Commercial Standardization of Instrument Testing of Cotton with particular consideration of Africa



This project is co-funded by the European Union  
and the Common Fund for Commodities





## International Cotton Advisory Committee



# CSITC Global - Round Trial 2012 - 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  
and the European Union, partners in Commodity Development.



Global - Round Trial 2012 - 1

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

Micronaire								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			4.028	2.496	4.200	4.324		4.195
Reference Values for Evaluation			4.028	2.496	4.200	4.324		4.195
Number Of Instruments			104	104	104	104	<b>104</b>	104
Inter-Instrument Variation	based on 30 tests	SD	0.078	0.060	0.058	0.074	<b>0.068</b>	0.060
		CV %	1.9	2.4	1.4	1.7	<b>1.9</b>	1.4
	based on 6 tests	SD	0.080	0.063	0.064	0.074	<b>0.070</b>	0.067
		CV %	2.0	2.5	1.5	1.7	<b>1.9</b>	1.6
	based on single tests	SD	0.091	0.071	0.073	0.082	<b>0.079</b>	0.076
		CV %	2.3	2.8	1.7	1.9	<b>2.2</b>	1.8
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.025	0.023	0.025	0.028	<b>0.025</b>	0.025
		CV %	0.6	0.9	0.6	0.6	<b>0.7</b>	0.6
	between single tests on one day	SD	0.041	0.026	0.033	0.037	<b>0.034</b>	0.039
		CV %	1.0	1.1	0.8	0.9	<b>0.9</b>	0.9
	between all tests on different days	SD	0.048	0.035	0.043	0.048	<b>0.043</b>	0.047
		CV %	1.2	1.4	1.0	1.1	<b>1.2</b>	1.1

Strength								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			28.591	22.116	33.990	27.981		33.960
Reference Values for Evaluation			28.591	22.116	33.990	27.981		33.960
Number Of Instruments			105	105	105	105	<b>105</b>	105
Inter-Instrument Variation	based on 30 tests	SD	0.715	0.933	0.921	0.817	<b>0.847</b>	0.821
		CV %	2.5	4.2	2.7	2.9	<b>3.1</b>	2.4
	based on 6 tests	SD	0.837	0.954	0.992	0.869	<b>0.913</b>	0.954
		CV %	2.9	4.3	2.9	3.1	<b>3.3</b>	2.8
	based on single tests	SD	0.997	1.165	1.182	0.989	<b>1.083</b>	1.114
		CV %	3.5	5.3	3.5	3.5	<b>3.9</b>	3.3
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.334	0.346	0.388	0.367	<b>0.359</b>	0.373
		CV %	1.2	1.6	1.1	1.3	<b>1.3</b>	1.1
	between single tests on one day	SD	0.598	0.462	0.618	0.533	<b>0.553</b>	0.6
		CV %	2.1	2.1	1.8	1.9	<b>2.0</b>	1.8
	between all tests on different days	SD	0.693	0.581	0.730	0.664	<b>0.667</b>	0.766
		CV %	2.4	2.6	2.1	2.4	<b>2.4</b>	2.3

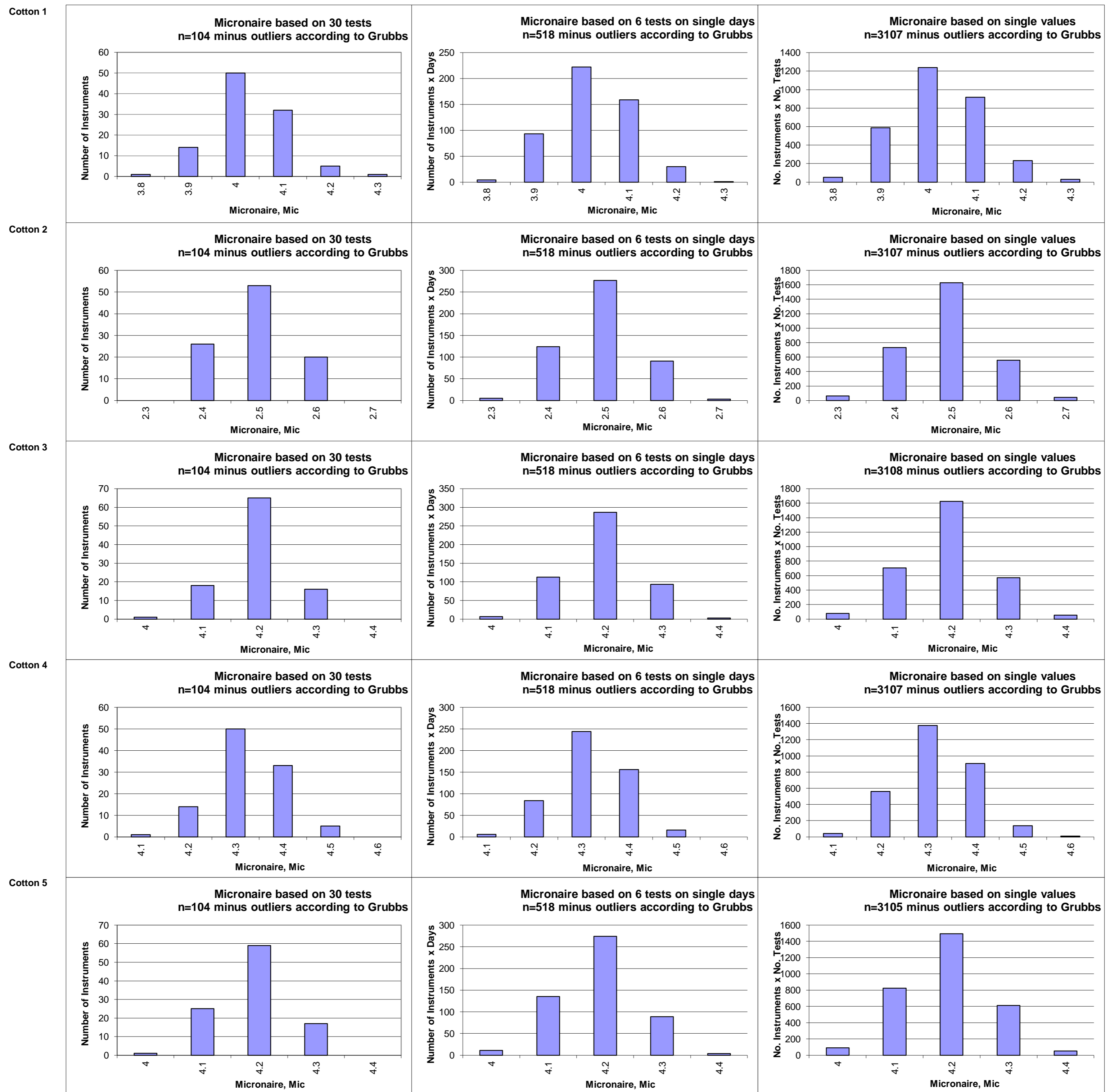
Length								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			1.1086	0.9747	1.2274	1.0640		1.2114
Reference Values for Evaluation			1.1086	0.9747	1.2274	1.0640		1.2114
Number Of Instruments			105	105	105	105	<b>105</b>	105
Inter-Instrument Variation	based on 30 tests	SD	0.0106	0.0119	0.0133	0.0101	<b>0.0115</b>	0.0105
		CV %	1.0	1.2	1.1	1.0	<b>1.1</b>	0.9
	based on 6 tests	SD	0.0121	0.0137	0.0145	0.0116	<b>0.0130</b>	0.0125
		CV %	1.1	1.4	1.2	1.1	<b>1.2</b>	1.0
	based on single tests	SD	0.0157	0.0169	0.0169	0.0153	<b>0.0162</b>	0.0169
		CV %	1.4	1.7	1.4	1.4	<b>1.5</b>	1.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.0052	0.0055	0.0057	0.0054	<b>0.0054</b>	0.0051
		CV %	0.5	0.6	0.5	0.5	<b>0.5</b>	0.4
	between single tests on one day	SD	0.0105	0.0100	0.0097	0.0093	<b>0.0099</b>	0.0089
		CV %	0.9	1.0	0.8	0.9	<b>0.9</b>	0.7
	between all tests on different days	SD	0.0115	0.0116	0.0111	0.0109	<b>0.0113</b>	0.0103
		CV %	1.0	1.2	0.9	1.0	<b>1.0</b>	0.9

Uniformity								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			80.341	77.432	83.689	80.548		84.581
Reference Values for Evaluation			80.341	77.432	83.689	80.548		84.581
Number Of Instruments			105	105	105	105	<b>105</b>	105
Inter-Instrument Variation	based on 30 tests	SD	0.557	0.758	0.522	0.438	<b>0.569</b>	0.469
		CV %	0.7	1.0	0.6	0.5	<b>0.7</b>	0.6
	based on 6 tests	SD	0.628	0.828	0.560	0.554	<b>0.642</b>	0.546
		CV %	0.8	1.1	0.7	0.7	<b>0.8</b>	0.6
	based on single tests	SD	0.839	1.012	0.716	0.758	<b>0.831</b>	0.720
		CV %	1.0	1.3	0.9	0.9	<b>1.0</b>	0.9
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.286	0.325	0.256	0.272	<b>0.285</b>	0.261
		CV %	0.4	0.4	0.3	0.3	<b>0.4</b>	0.3
	between single tests on one day	SD	0.560	0.527	0.460	0.496	<b>0.511</b>	0.437
		CV %	0.7	0.7	0.5	0.6	<b>0.6</b>	0.5
	between all tests on different days	SD	0.625	0.599	0.509	0.603	<b>0.584</b>	0.501
		CV %	0.8	0.8	0.6	0.7	<b>0.7</b>	0.6

Color Rd								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			80.502	79.007	75.748	76.790		77.953
Reference Values for Evaluation			80.502	79.007	75.748	76.790		77.953
Number Of Instruments			100	100	100	100	<b>100</b>	100
Inter-Instrument Variation	based on 30 tests	SD	0.778	0.832	1.124	0.801	<b>0.884</b>	0.995
		CV %	1.0	1.1	1.5	1.0	<b>1.1</b>	1.3
	based on 6 tests	SD	0.806	0.897	1.041	0.880	<b>0.906</b>	1.067
		CV %	1.0	1.1	1.4	1.1	<b>1.2</b>	1.4
	based on single tests	SD	0.874	0.923	1.069	0.897	<b>0.941</b>	1.085
		CV %	1.1	1.2	1.4	1.2	<b>1.2</b>	1.4
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.218	0.219	0.201	0.201	<b>0.209</b>	0.219
		CV %	0.3	0.3	0.3	0.3	<b>0.3</b>	0.3
	between single tests on one day	SD	0.243	0.208	0.198	0.181	<b>0.207</b>	0.203
		CV %	0.3	0.3	0.3	0.2	<b>0.3</b>	0.3
	between all tests on different days	SD	0.334	0.310	0.289	0.294	<b>0.307</b>	0.306
		CV %	0.4	0.4	0.4	0.4	<b>0.4</b>	0.4

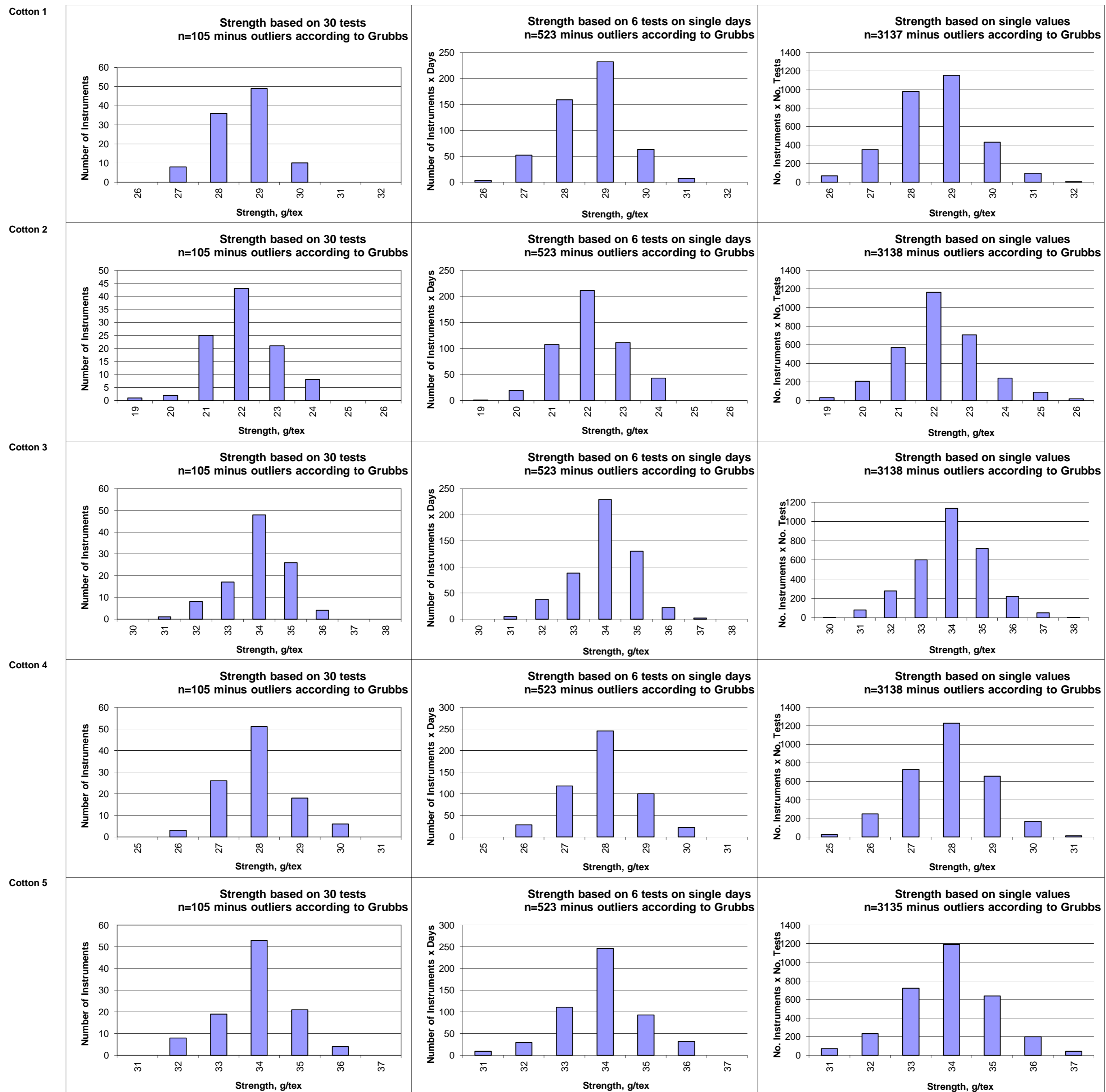
Color +b								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
Average of Instruments (Grubbs)			9.211	12.256	11.616	9.827		11.595
Reference Values for Evaluation			9.211	12.256	11.616	9.827		11.595
Number Of Instruments			100	100	100	100	<b>100</b>	100
Inter-Instrument Variation	based on 30 tests	SD	0.323	0.424	0.327	0.314	<b>0.347</b>	0.378
		CV %	3.5	3.5	2.8	3.2	<b>3.2</b>	3.3
	based on 6 tests	SD	0.369	0.444	0.342	0.328	<b>0.371</b>	0.405
		CV %	4.0	3.6	2.9	3.3	<b>3.5</b>	3.5
	based on single tests	SD	0.392	0.465	0.366	0.356	<b>0.395</b>	0.415
		CV %	4.3	3.8	3.1	3.6	<b>3.7</b>	3.6
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.115	0.122	0.108	0.100	<b>0.112</b>	0.128
		CV %	1.3	1.0	0.9	1.0	<b>1.1</b>	1.1
	between single tests on one day	SD	0.114	0.109	0.110	0.098	<b>0.108</b>	0.112
		CV %	1.2	0.9	0.9	1.0	<b>1.0</b>	1.0
	between all tests on different days	SD	0.166	0.180	0.158	0.150	<b>0.164</b>	0.170
		CV %	1.8	1.5	1.4	1.5	<b>1.5</b>	1.5

Test Result Distributions  
Micronaire



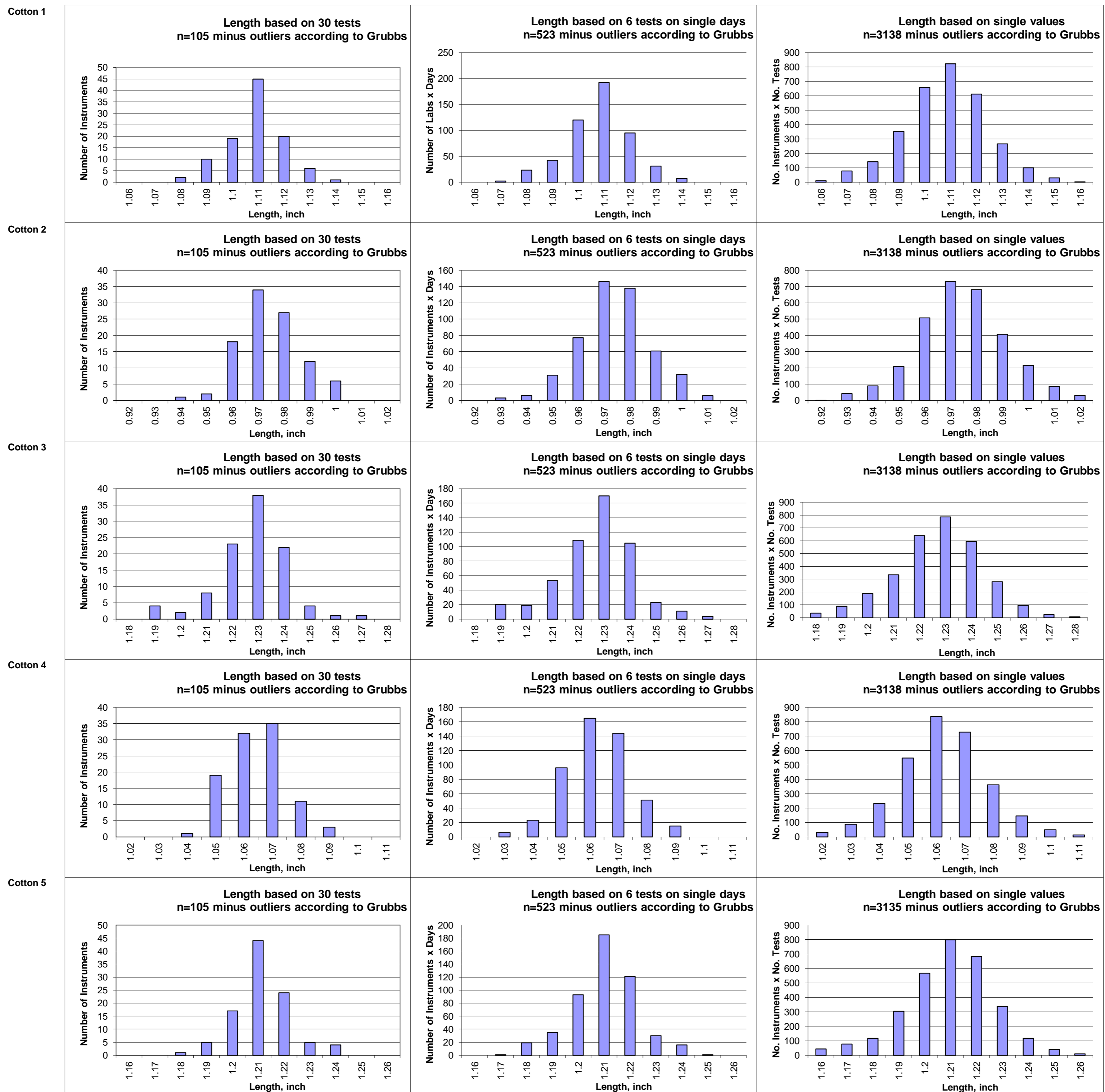
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method.)  
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions  
Strength



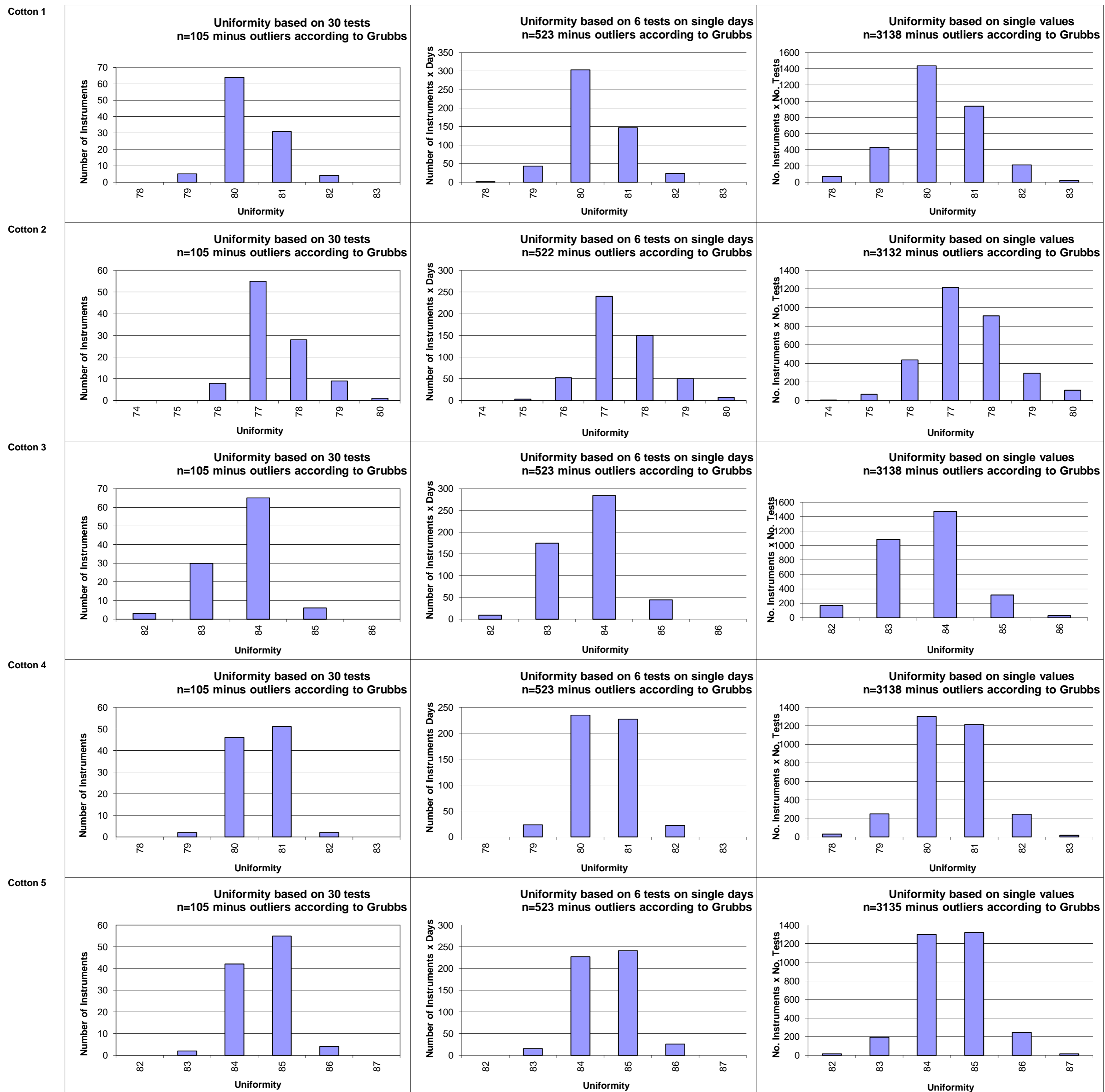
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Test Result Distributions  
Length



(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)

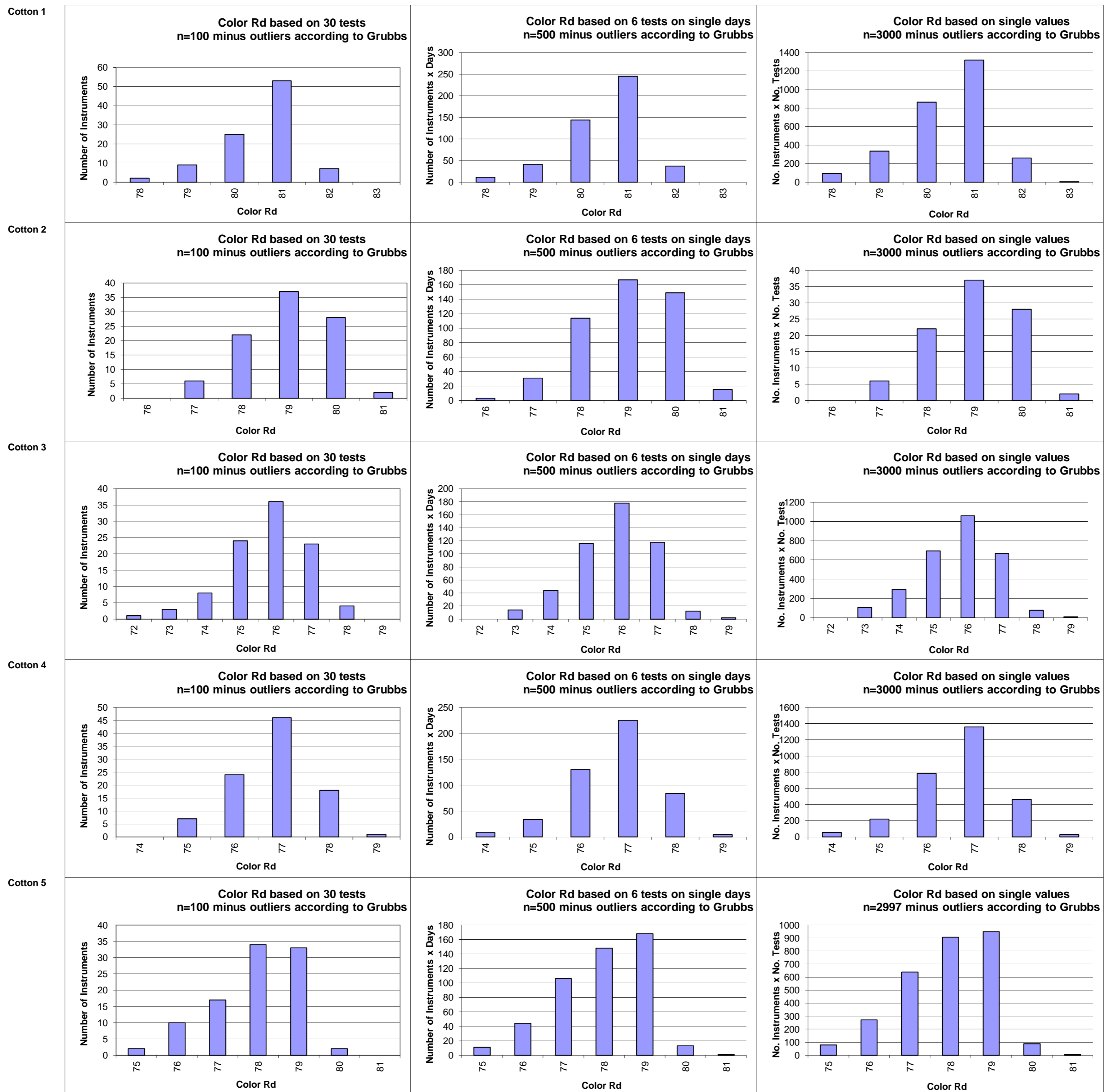
Test Result Distributions  
Uniformity



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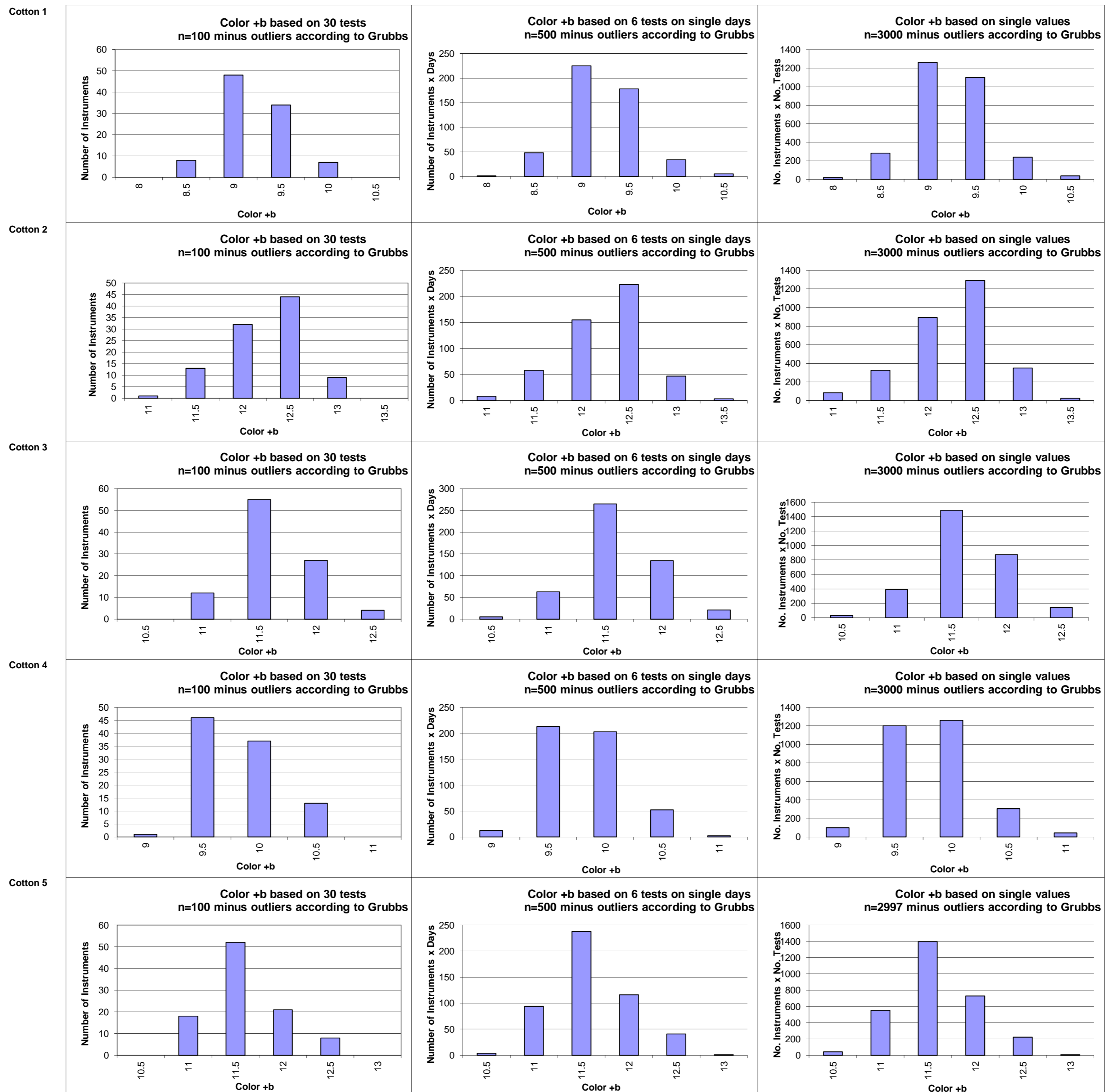


Test Result Distributions  
Color Rd



(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)

### Optional Parameters

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

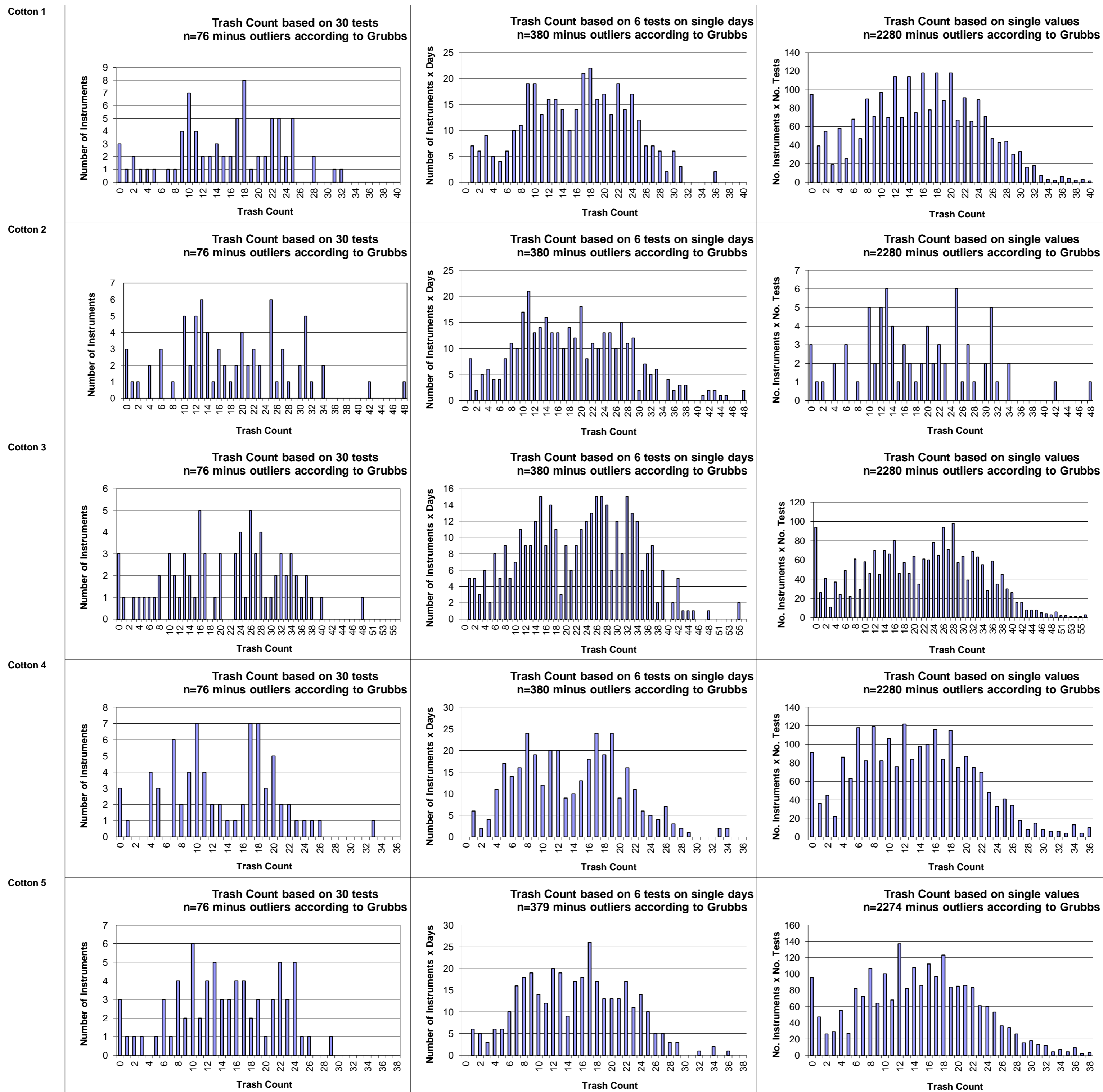
Trash Count								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
<b>Average of Instruments (Grubbs)</b>			15.62	18.20	21.41	13.32		14.44
<b>Reference Values for Evaluation</b>			15.62	18.20	21.41	13.32		14.44
<b>Number Of Instruments</b>			76	76	76	76	<b>76</b>	76
<b>Inter-Instrument Variation</b>	based on 30 tests	SD	7.74	9.88	11.02	6.92	<b>8.89</b>	6.99
		CV %	49.6	54.3	51.5	52.0	<b>51.8</b>	48.4
	based on 6 tests	SD	7.85	9.98	11.36	7.15	<b>9.09</b>	7.41
		CV %	50.2	54.8	53.1	53.7	<b>53.0</b>	51.3
	based on single tests	SD	8.28	10.09	11.65	7.60	<b>9.40</b>	7.90
		CV %	53.0	55.4	54.4	57.0	<b>55.0</b>	54.7
<b>Typical within-instrument Variation (Median)</b>	between different days with each 6 tests	SD	1.81	2.03	2.16	1.64	<b>1.91</b>	1.94
		CV %	11.6	11.1	10.1	12.3	<b>11.3</b>	13.4
	between single tests on one day	SD	2.48	2.49	2.52	2.12	<b>2.40</b>	2.12
		CV %	15.9	13.7	11.8	15.9	<b>14.3</b>	14.7
	between all tests on different days	SD	3.31	3.33	3.73	2.71	<b>3.27</b>	3.19
		CV %	21.2	18.3	17.4	20.3	<b>19.3</b>	22.1

Trash Area								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
<b>Average of Instruments (Grubbs)</b>			0.174	0.182	0.188	0.170		0.158
<b>Reference Values for Evaluation</b>			0.174	0.182	0.188	0.170		0.158
<b>Number Of Instruments</b>			75	75	75	75	<b>75</b>	75
<b>Inter-Instrument Variation</b>	based on 30 tests	SD	0.052	0.063	0.063	0.063	<b>0.060</b>	0.054
		CV %	29.9	34.8	33.6	36.8	<b>33.8</b>	33.8
	based on 6 tests	SD	0.064	0.065	0.067	0.071	<b>0.067</b>	0.056
		CV %	37.1	35.8	35.5	41.7	<b>37.5</b>	35.6
	based on single tests	SD	0.080	0.080	0.079	0.080	<b>0.079</b>	0.067
		CV %	45.8	44.1	41.7	47.0	<b>44.6</b>	42.3
<b>Typical within-instrument Variation (Median)</b>	between different days with each 6 tests	SD	0.027	0.027	0.025	0.027	<b>0.026</b>	0.024
		CV %	15.5	14.6	13.2	16.1	<b>14.9</b>	14.9
	between single tests on one day	SD	0.036	0.032	0.029	0.031	<b>0.032</b>	0.0
		CV %	20.9	17.8	15.6	18.2	<b>18.2</b>	17.7
	between all tests on different days	SD	0.051	0.043	0.043	0.046	<b>0.046</b>	0.043
		CV %	29.1	23.7	22.7	27.4	<b>25.7</b>	27.2

Maturity								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
<b>Average of Instruments (Grubbs)</b>			84.41	78.44	84.76	83.53		85.67
<b>Reference Values for Evaluation</b>			84.41	78.44	84.76	83.53		85.67
<b>Number Of Instruments</b>			76	76	76	76	<b>76</b>	76
<b>Inter-Instrument Variation</b>	based on 30 tests	SD	2.12	4.14	4.51	4.78	<b>3.89</b>	3.05
		CV %	2.5	5.3	5.3	5.7	<b>4.7</b>	3.6
	based on 6 tests	SD	1.87	4.20	4.37	4.80	<b>3.81</b>	3.05
		CV %	2.2	5.3	5.1	5.7	<b>4.6</b>	3.6
	based on single tests	SD	1.94	4.20	2.88	2.15	<b>2.79</b>	2.98
		CV %	2.3	5.4	3.4	2.6	<b>3.4</b>	3.5
<b>Typical within-instrument Variation (Median)</b>	between different days with each 6 tests	SD	0.30	0.32	0.27	0.33	<b>0.31</b>	0.27
		CV %	0.4	0.4	0.3	0.4	<b>0.4</b>	0.3
	between single tests on one day	SD	0.40	0.33	0.35	0.43	<b>0.38</b>	0.30
		CV %	0.5	0.4	0.4	0.5	<b>0.5</b>	0.4
	between all tests on different days	SD	0.50	0.50	0.48	0.51	<b>0.50</b>	0.47
		CV %	0.6	0.6	0.6	0.6	<b>0.6</b>	0.5

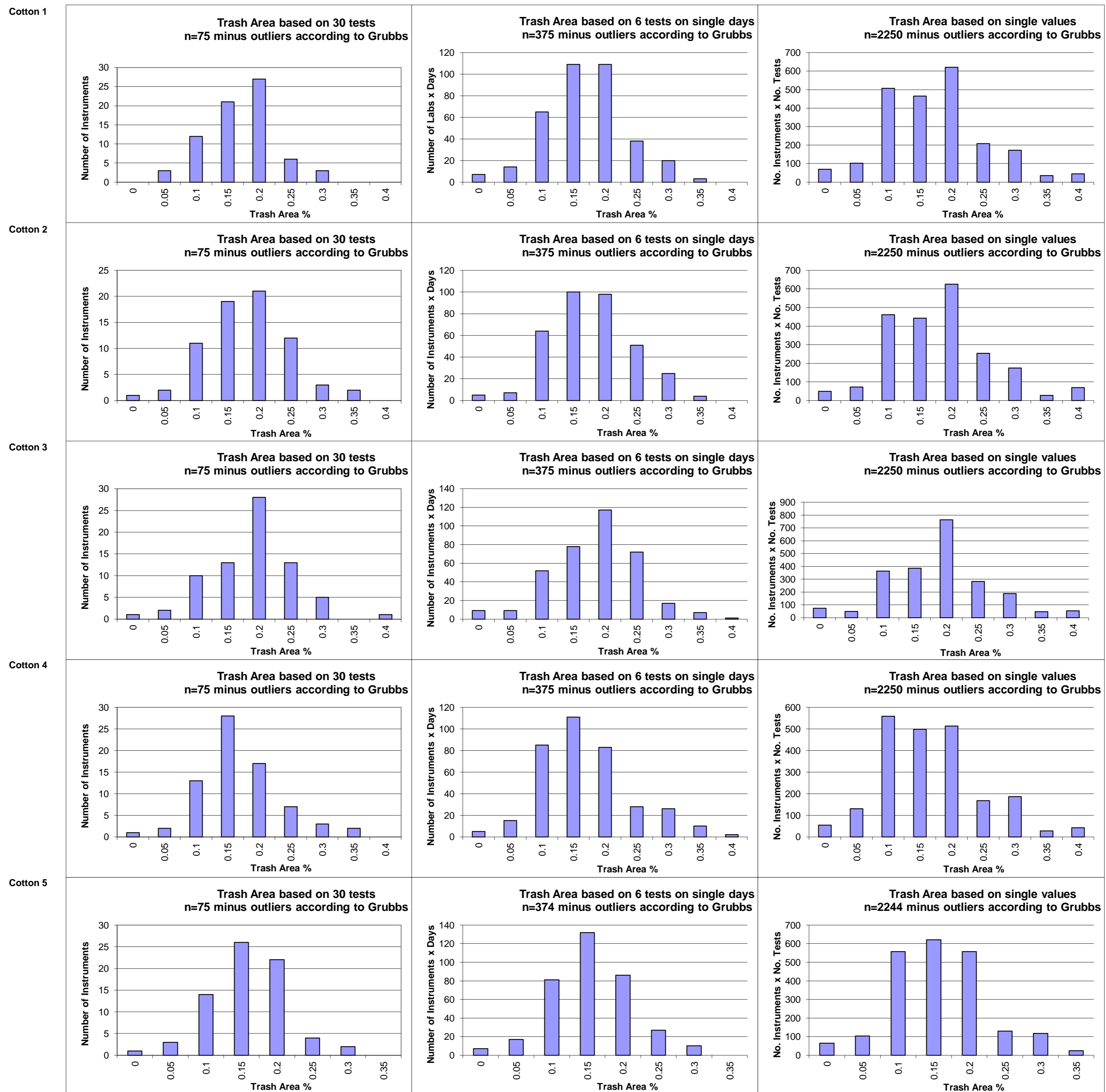
SFI								
			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average	Cotton 5
<b>Average of Instruments (Grubbs)</b>			10.57	15.94	6.77	10.96		6.61
<b>Reference Values for Evaluation</b>			10.57	15.94	6.77	10.96		6.61
<b>Number Of Instruments</b>			86	86	86	86	<b>86</b>	86
<b>Inter-Instrument Variation</b>	based on 30 tests	SD	1.47	2.49	1.39	1.84	<b>1.80</b>	1.25
		CV %	13.9	15.6	20.5	16.8	<b>16.7</b>	18.9
	based on 6 tests	SD	1.29	2.52	1.30	1.56	<b>1.67</b>	1.27
		CV %	12.2	15.8	19.2	14.2	<b>15.4</b>	19.2
	based on single tests	SD	1.49	2.63	1.35	1.68	<b>1.79</b>	1.33
		CV %	14.1	16.5	19.9	15.4	<b>16.5</b>	20.1
<b>Typical within-instrument Variation (Median)</b>	between different days with each 6 tests	SD	0.29	0.45	0.20	0.36	<b>0.33</b>	0.17
		CV %	2.7	2.8	3.0	3.2	<b>3.0</b>	2.6
	between single tests on one day	SD	0.54	0.68	0.29	0.54	<b>0.51</b>	0.25
		CV %	5.1	4.3	4.3	4.9	<b>4.7</b>	3.8
	between all tests on different days	SD	0.63	0.81	0.33	0.66	<b>0.60</b>	0.31
		CV %	5.9	5.1	4.8	6.0	<b>5.4</b>	4.6

Test Result Distributions  
Trash Count



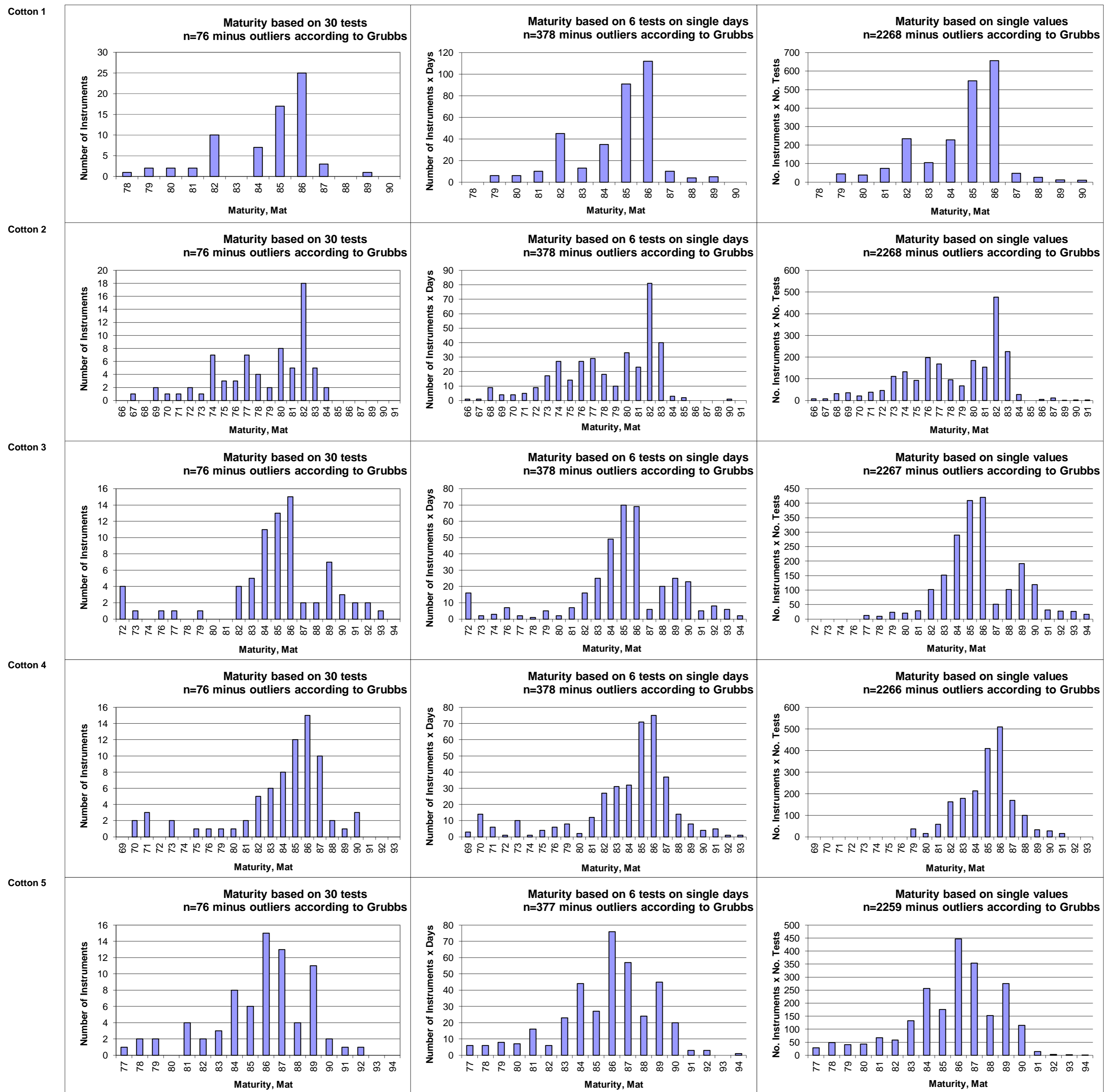
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)  
(classes are defined as > lower limit and <= upper limit)

Test Result Distributions  
Trash Area



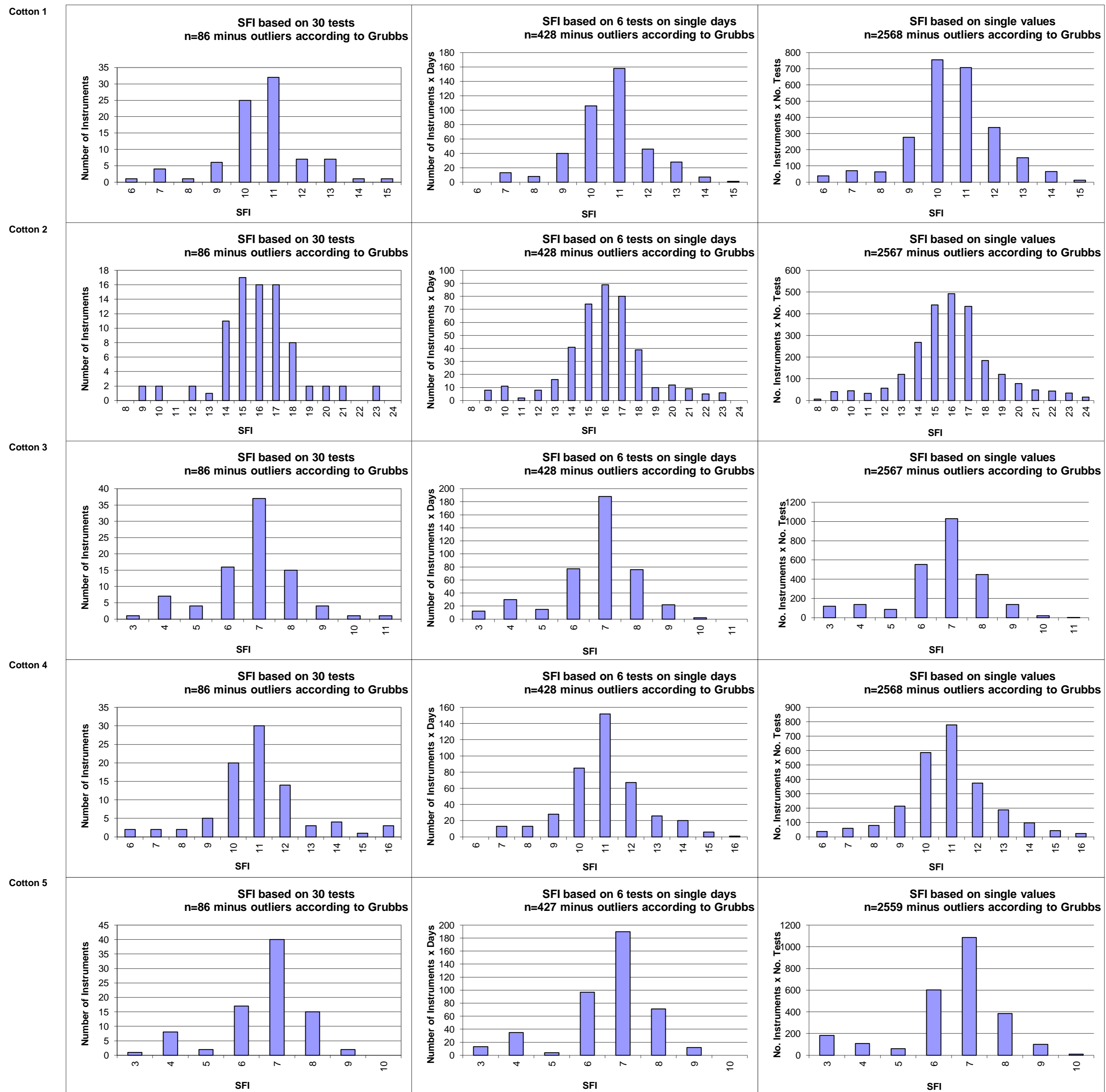
(Only results from instruments/days/single tests that are not regarded as outliers according to Grubbs' method)  
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Test Result Distributions  
Maturity



(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 2012 - 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

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.



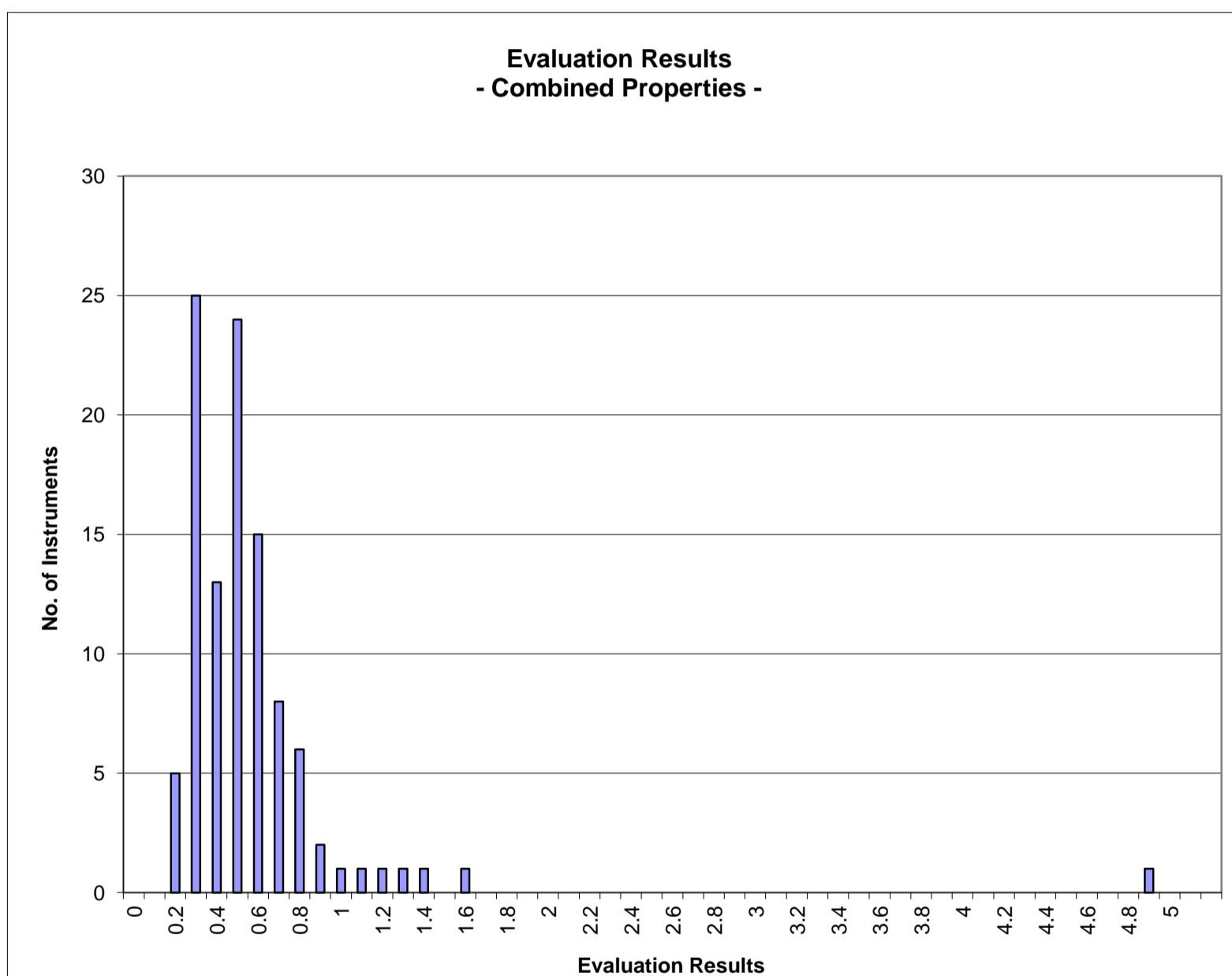
Instrument Evaluation

- Graph of Combined Properties -

According to ICAC CSITC Task Force Recommendations

Global - Round Trial 2012 - 1

		<b>Evaluation Combined Prop.</b>
<b>Statistics</b>	Average	0.57
	Median	0.50
	Best Instrument	0.15
	Worst Instrument	4.93

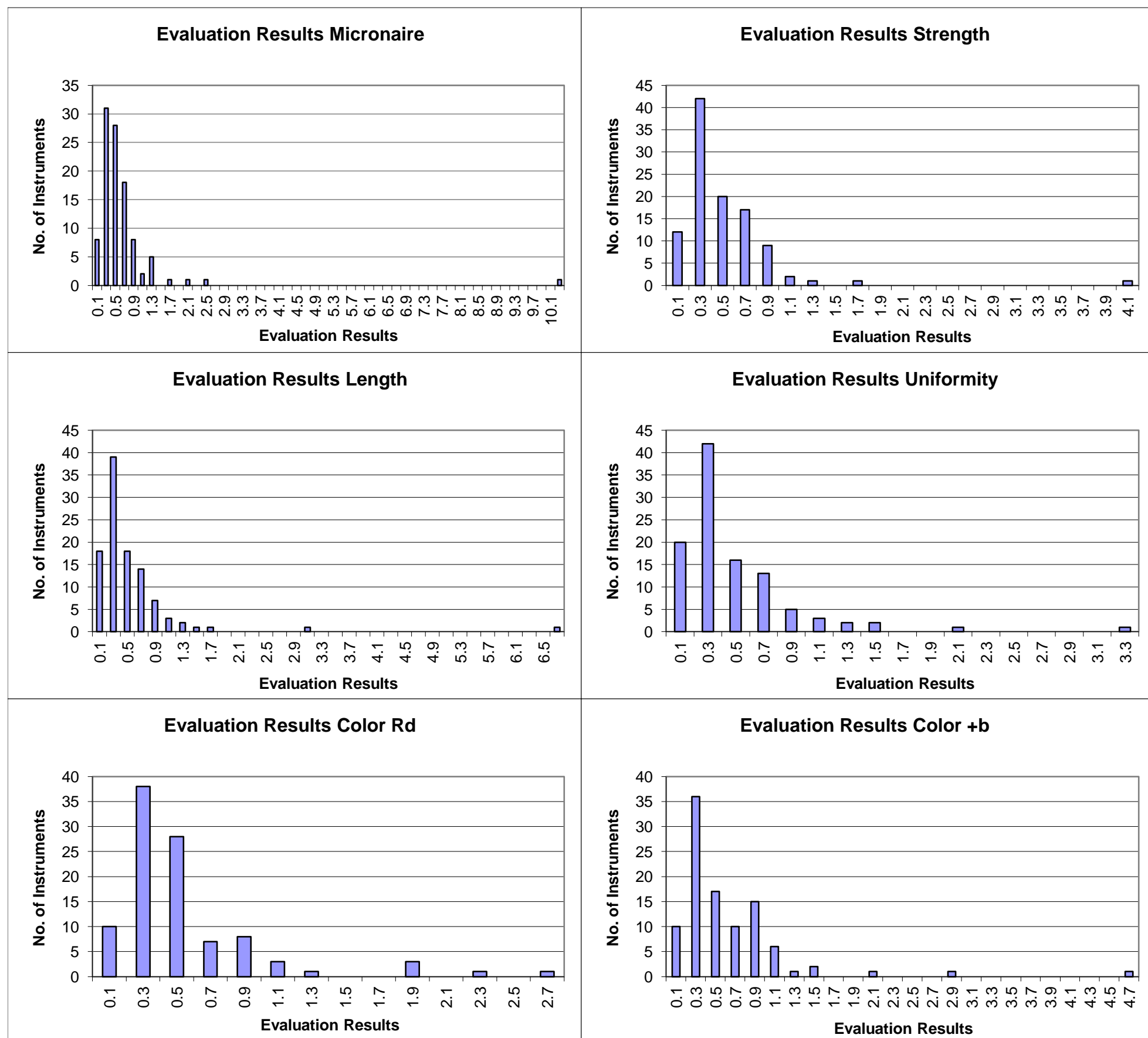


x-Axis shows midpoints of classes

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 2012 - 1

		Evaluation Micronaire	Evaluation Strength	Evaluation Length	Evaluation Uniformity	Evaluation Color Rd	Evaluation Color +b
<b>Statistics</b>	Average	0.67	0.50	0.55	0.50	0.53	0.62
	Median	0.49	0.39	0.37	0.36	0.40	0.43
	Best Instr.	0.08	0.07	0.08	0.10	0.05	0.05
	Worst Instr.	10.21	4.17	6.63	3.38	2.70	4.71



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



**International Cotton Advisory Committee**



# CSITC

## Global - Round Trial 2012 - 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

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.



## Within Limits Evaluation

Based on average of 30 test results for each sample

	<b>Micronaire</b>	<b>Strength</b>	<b>Length</b>	<b>Uniformity</b>	<b>Color Rd</b>	<b>Color +b</b>
Limits	0.20	2.0	0.030	2.0	1.5	1.0
	units	g/tex	inch	%	units	units
Average % Results within Limits	96.9	95.7	94.8	97.6	88.3	97.5
Completely within limits	93.3	87.6	89.5	94.3	80.0	96.0
% of Instruments $\geq 75\%$ within limits	96.2	96.2	94.3	98.1	87.0	97.0
% of Instruments $\geq 50\%$ within limits	99.0	99.0	97.1	98.1	92.0	98.0

Percentage of Results Within Limits						
<b>Instrument</b>	<b>Micronaire</b>	<b>Strength</b>	<b>Length</b>	<b>Uniformity</b>	<b>Color Rd</b>	<b>Color +b</b>
GL121-001-01	100	100	100	100	100	100
GL121-001-02	100	100	100	100	100	100
GL121-001-03	100	100	100	100	100	100
GL121-003-01	100	100	100	100	100	100
GL121-004-01	100	100	100	100	100	100
GL121-004-02	100	100	100	100	100	100
GL121-007-01	100	100	75	100	0	50
GL121-008-01	100	100	100	100	0	0
GL121-009-01	75	100	100	100	100	100
GL121-010-01	100	100	100	100	0	100
GL121-011-01		75	100	100		
GL121-012-16	100	100	100	100	100	100
GL121-012-19	100	100	100	100	100	100
GL121-013-01	100	100	75	100	100	100
GL121-013-02	100	100	75	100	100	100
GL121-013-03	100	75	100	100	75	100
GL121-013-04	100	75	100	100	75	100
GL121-014-01	100	100	100	100	100	100
GL121-015-01	100	100	100	100	100	100
GL121-017-01	100	50	100	100	100	100
GL121-017-02	100	100	100	100	100	100
GL121-017-03	100	100	100	100	100	100
GL121-018-01	50	100	100	100	100	100
GL121-019-01	100	75	100	75	100	100
GL121-020-01	100	100	100	100	100	100
GL121-021-01	100	100	100	100	100	100
GL121-023-01	100	100	100	100	100	100
GL121-024-01	100	100	100	100	0	100
GL121-029-01	100	75	100	100	100	100
GL121-031-01	100	100	100	100	100	100
GL121-032-01	100	100	0	25	50	100
GL121-034-01	100	100	100	100	100	100
GL121-038-01	100	75	100	100	100	100
GL121-039-02	100	100	100	100	100	100
GL121-039-06	100	100	100	100	100	100
GL121-040-21	100	100	100	100	0	100
GL121-040-40	100	100	100	100	50	100
GL121-042-01	100	100	100	100	100	100

GL121-044-01	100	100	100	100	100	100
GL121-046-01	100	100	100	100	100	100
GL121-047-01	100	100	100	100		
GL121-047-02	100	100	100	100		
GL121-047-03	50	100	100	100		
GL121-048-01	100	100	100	75	100	100
GL121-048-03	100	100	100	100	100	100
GL121-049-01	100	100	100	100	100	100
GL121-049-02	100	100	100	100	100	100
GL121-049-04	100	100	100	100	100	100
GL121-049-05	100	100	100	100	100	100
GL121-050-01	100	100	100	100	100	100
GL121-051-01	100	100	100	100	100	100
GL121-053-11	100	100	100	100	100	100
GL121-053-19	100	100	100	100	100	100
GL121-055-01	100	100	100	100	100	100
GL121-056-01	100	100	100	100	100	100
GL121-056-02	100	100	100	100	100	100
GL121-057-01	100	100	100	100	100	100
GL121-057-02	100	75	100	100	100	100
GL121-058-01	100	100	75	100	100	100
GL121-059-01	100	100	75	75	75	75
GL121-060-03	100	50	25	75		
GL121-061-01	100	100	100	100	100	100
GL121-061-02	100	100	100	100	100	100
GL121-061-04	100	100	100	100	100	100
GL121-061-05	100	100	100	100	100	100
GL121-062-01	100	100	100	100	25	100
GL121-062-02	100	100	100	100	75	100
GL121-063-01	100	100	50	100	100	100
GL121-064-02	100	100	100	100	100	100
GL121-065-01	100	100	50	100	100	100
GL121-066-01	100	100	100	100	25	100
GL121-067-03	100	100	100	100	100	100
GL121-068-12	100	100	100	100	100	100
GL121-068-23	100	100	100	100	100	100
GL121-069-01	0	25	0	25	0	25
GL121-071-02	100	100	100	100	100	100
GL121-071-04	100	100	100	100	50	100
GL121-071-07	75	100	100	100	100	100
GL121-072-01	100	100	100	100	100	100
GL121-073-11	75	100	100	100	100	100
GL121-075-01	100	100	100	100	50	100
GL121-076-01	100	100	100	100	100	100
GL121-076-08	100	100	100	100	100	100
GL121-077-01	100	75	100	100	100	100
GL121-078-01	100	100	100	100	50	100
GL121-079-01	100	100	100	100	100	100
GL121-079-02	100	100	100	100	75	100
GL121-080-01	100	100	100	100	100	100
GL121-080-03	100	100	100	100	100	100
GL121-080-04	100	100	100	100	100	100
GL121-080-05	100	100	100	100	100	100
GL121-081-01	100	100	100	100	100	100
GL121-081-17	100	100	100	100	100	100
GL121-081-18	100	100	100	100	100	100
GL121-082-01	100	100	100	100	100	100
GL121-082-02	100	100	100	100	100	100
GL121-082-04	100	100	100	100	100	100

GL121-082-05	100	100	100	100	100	100
GL121-083-01	100	75	100	100	75	100
GL121-084-01	100	100	100	100	100	100
GL121-084-02	100	100	100	100	100	100
GL121-085-01	50	50	50	100	75	100
GL121-085-03	100	100	100	100	100	100
GL121-086-01	100	100	100	100	100	100
GL121-087-03	100	100	100	100	100	100

# Within Limits Evaluation

Based on Single Test Results

	<b>Micronaire</b>	<b>Strength</b>	<b>Length</b>	<b>Uniformity</b>	<b>Color Rd</b>	<b>Color +b</b>
Limits	0.20	2.0	0.030	2.0	1.5	1.0
	units	g/tex	inch	%	units	units
Average % Results within Limits	96.5	90.8	92.8	95.0	86.1	96.0
% of Instruments 100% within limits	59.6	25.7	36.2	46.7	44.0	69.0
% of Instruments ≥95% within limits	86.5	52.4	69.5	74.3	61.0	85.0
% of Instruments ≥75% within limits	97.1	89.5	93.3	98.1	84.0	97.0
% of Instruments ≥65% within limits	97.1	96.2	97.1	98.1	84.0	97.0
% of Instruments ≥50% within limits	99.0	97.1	97.1	99.0	90.0	98.0

Percentage of Results Within Limits						
<b>Instrument</b>	<b>Micronaire</b>	<b>Strength</b>	<b>Length</b>	<b>Uniformity</b>	<b>Color Rd</b>	<b>Color +b</b>
GL121-001-01	100	94	97	100	100	100
GL121-001-02	98	95	98	100	100	100
GL121-001-03	100	88	99	100	100	100
GL121-003-01	99	98	100	98	100	100
GL121-004-01	100	100	100	100	100	100
GL121-004-02	100	100	100	100	100	100
GL121-007-01	97	97	72	90	0	50
GL121-008-01	98	72	83	83	0	3
GL121-009-01	88	100	97	100	96	100
GL121-010-01	100	81	93	98	14	97
GL121-011-01		48	87	79		
GL121-012-16	99	94	100	100	100	100
GL121-012-19	100	98	100	98	100	99
GL121-013-01	100	88	78	86	93	100
GL121-013-02	99	78	83	79	75	96
GL121-013-03	78	74	78	83	78	99
GL121-013-04	89	67	91	93	80	100
GL121-014-01	96	93	98	99	100	100
GL121-015-01	100	95	93	93	98	100
GL121-017-01	100	63	96	93	95	94
GL121-017-02	100	92	100	96	92	100
GL121-017-03	100	100	100	100	100	100
GL121-018-01	63	96	99	98	100	92
GL121-019-01	99	75	86	88	100	87
GL121-020-01	100	96	98	97	100	100
GL121-021-01	100	97	100	100	78	100
GL121-023-01	100	96	88	80	88	100
GL121-024-01	86	83	78	83	7	93
GL121-029-01	100	75	100	100	100	99
GL121-031-01	100	88	99	100	92	99
GL121-032-01	96	88	28	53	58	100
GL121-034-01	100	98	98	99	99	100
GL121-038-01	100	78	100	99	99	100
GL121-039-02	94	100	89	100	93	92
GL121-039-06	92	99	91	99	96	93
GL121-040-21	100	98	100	97	7	100



GL121-040-40	100	98	100	93	52	100
GL121-042-01	100	96	98	100	100	100
GL121-044-01	100	89	91	98	98	100
GL121-046-01	97	94	97	100	98	100
GL121-047-01	98	85	92	90		
GL121-047-02	84	92	97	97		
GL121-047-03	56	90	100	100		
GL121-048-01	97	87	93	75	94	96
GL121-048-03	99	88	95	89	97	99
GL121-049-01	100	100	100	99	99	100
GL121-049-02	100	100	100	100	100	100
GL121-049-04	100	100	100	100	93	100
GL121-049-05	100	100	100	100	97	100
GL121-050-01	100	91	100	100	100	100
GL121-051-01	100	91	99	97	99	100
GL121-053-11	100	99	99	99	100	100
GL121-053-19	100	92	84	96	98	100
GL121-055-01	100	98	98	100	92	100
GL121-056-01	99	98	100	100	100	100
GL121-056-02	100	74	100	100	100	100
GL121-057-01	99	94	100	100	100	100
GL121-057-02	99	74	100	100	100	98
GL121-058-01	98	93	73	92	100	100
GL121-059-01	100	100	82	78	60	81
GL121-060-03	100	48	37	77		
GL121-061-01	100	100	98	100	100	100
GL121-061-02	100	100	98	100	100	100
GL121-061-04	100	100	99	100	98	100
GL121-061-05	99	100	98	100	100	100
GL121-062-01	98	93	93	94	28	99
GL121-062-02	100	98	96	98	48	100
GL121-063-01	100	98	70	96	94	100
GL121-064-02	99	91	98	100	93	100
GL121-065-01	100	96	65	98	93	100
GL121-066-01	100	100	99	96	28	98
GL121-067-03	100	99	100	100	100	100
GL121-068-12	100	100	100	100	100	100
GL121-068-23	100	100	100	100	100	100
GL121-069-01	9	23	6	26	6	28
GL121-071-02	100	100	97	91	92	100
GL121-071-04	97	91	90	100	48	100
GL121-071-07	98	88	87	100	85	97
GL121-072-01	100	100	100	99	86	100
GL121-073-11	77	89	84	94	78	84
GL121-075-01	100	96	98	100	59	99
GL121-076-01	100	89	100	100	100	100
GL121-076-08	100	95	100	100	100	100
GL121-077-01	100	70	99	94	94	100
GL121-078-01	100	96	98	97	53	99
GL121-079-01	99	98	98	93	99	100
GL121-079-02	98	98	99	99	59	84
GL121-080-01	100	100	100	100	100	100
GL121-080-03	100	100	100	100	100	100
GL121-080-04	99	100	100	100	100	100
GL121-080-05	100	100	100	100	91	100
GL121-081-01	99	93	95	95	100	95
GL121-081-17	99	93	95	95	100	95
GL121-081-18	100	97	100	100	100	100
GL121-082-01	100	100	100	100	100	100
GL121-082-02	98	100	100	100	100	100

GL121-082-04	100	100	100	100	100	100
GL121-082-05	100	100	100	100	100	100
GL121-083-01	100	68	98	100	83	84
GL121-084-01	100	93	88	95	100	83
GL121-084-02	100	87	83	95	96	100
GL121-085-01	88	86	90	88	84	93
GL121-085-03	93	81	98	98	100	100
GL121-086-01	92	81	100	100	99	100
GL121-087-03	100	98	99	100	100	100