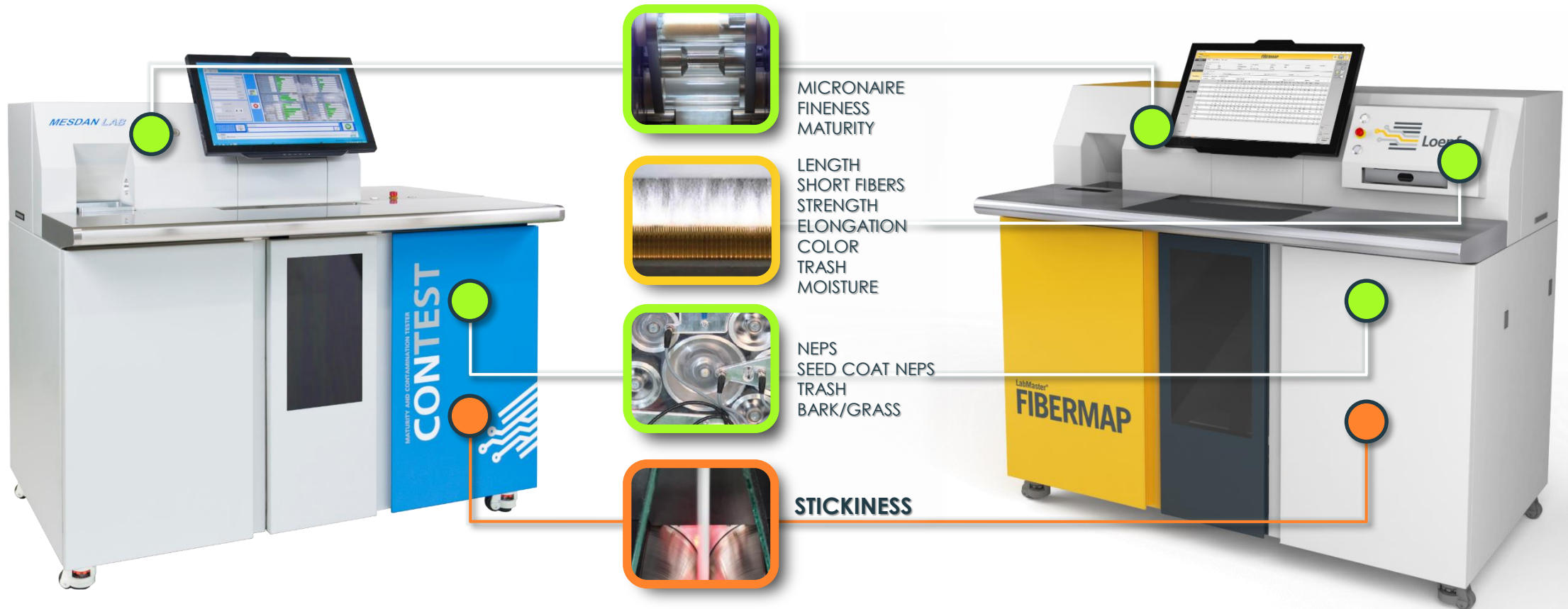# CONTEST / FIBERMAP

THE FIRST YEAR OF FIELD TESTING ON STICKINESS DETECTION

ITMF-ICCTM Meeting, March 19th - 20th 2018, Bremen

Gabriele Salvinelli – Chief of R&D Testing Department, Mesdan Lab

Loepfe   Mesdan

Mesdan CONTEST and Loepfe Labmaster FIBERMAP

Mesdan

Loepfe

MICRONAIRE
FINENESS
MATURITY

LENGTH
SHORT FIBERS
STRENGTH
ELONGATION
COLOR
TRASH
MOISTURE

NEPS
SEED COAT NEPS
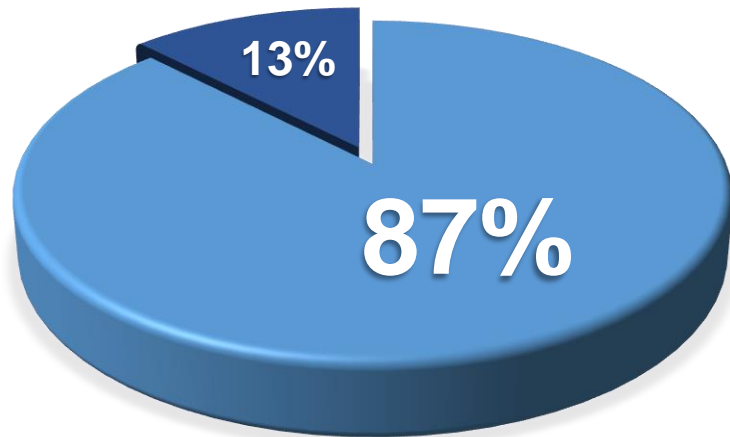TRASH
BARK/GRASS

STICKINESS

Contents

CONTEST/FIBERMAP

- STICKINESS TESTER: principle of detection

- Functioning efficiency & Test Volume

- Repeatability & Reproducibility

- Stickiness Grade evaluation [under investigation…]

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CONTEST : Efficiency & Test Volume

FIRST YEAR OF FIELD TESTING

31646 TESTS
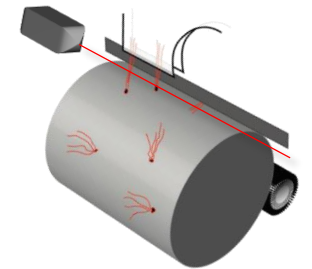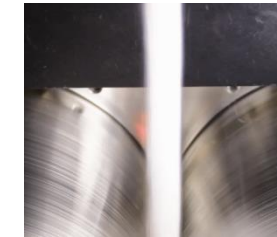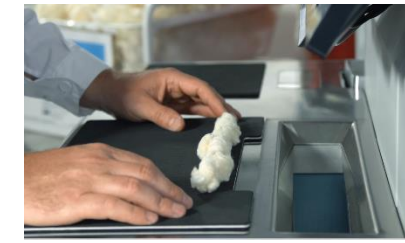

13%

87%

■ = COMPLETED   ■ = REJECTED

FREQUENT REASONS OF TEST REJECTION:

- *Inaccurate sample preparation*
- *Wrapping around the cards*
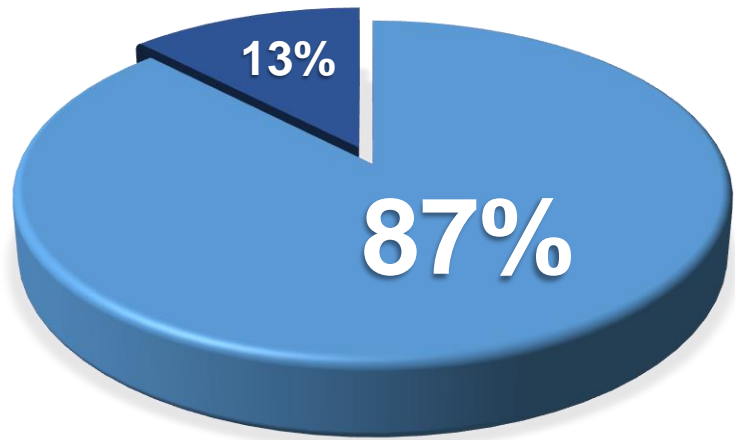- *Web breakages*

- **_Quick_** sample preparation;

- Whole process in about **_1 minute_**;

- 10 m long web from a **_sample of 3.5 gr_**;

- Web is pressed through two revolving heated drums;

- Optical detection of sticky deposits and size evaluation;

- **_Automatic cleaning_** by a brush/blade-mechanism;

- Stable drum temperature by a patented friction system.

CON**TEST** : Efficiency & Test Volume

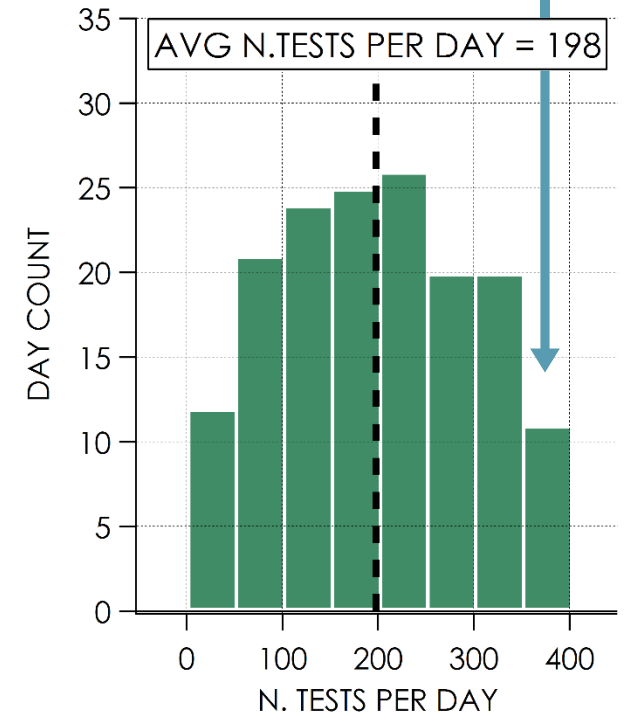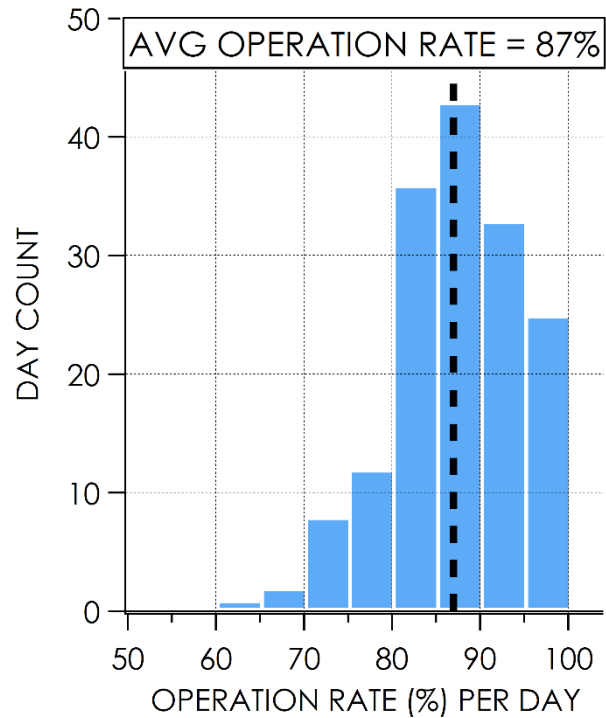FIRST YEAR OF FIELD TESTING

31646 TESTS

87%

13%

■ = COMPLETED   ■ = REJECTED

FREQUENT REASONS OF TEST REJECTION:

- Inaccurate sample preparation
- Wrapping around the cards
- Web breakages

400 TESTS/DAY IS ACHIEVABLE

AVG OPERATION RATE = 87%

DAY COUNT

OPERATION RATE (%) PER DAY

AVG N.TESTS PER DAY = 198

DAY COUNT

N. TESTS PER DAY

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CONTEST : Repeatability

1 STICKY COTTON + 1 NOT-STICKY COTTON:

❖ *100 consecutive tests:*

COTTON	AVG	Stand.Dev	CV%
STICKY	232.8	23.3	10.0 %
NOT STICKY	17.8	7.2	40.4 %

❖ *77 alternate tests:* **STICKY COTTONS DO NOT CONTAMINATE NOT-STICKY MEASUREMENTS**
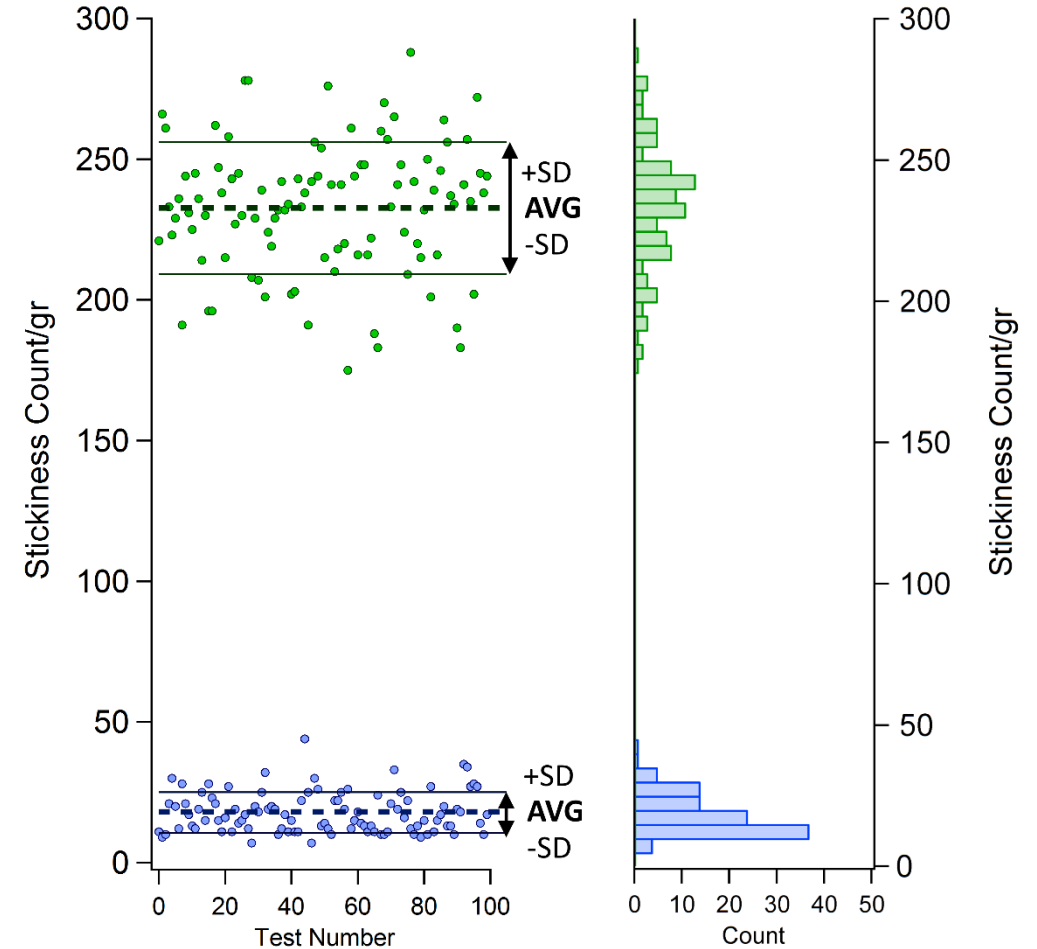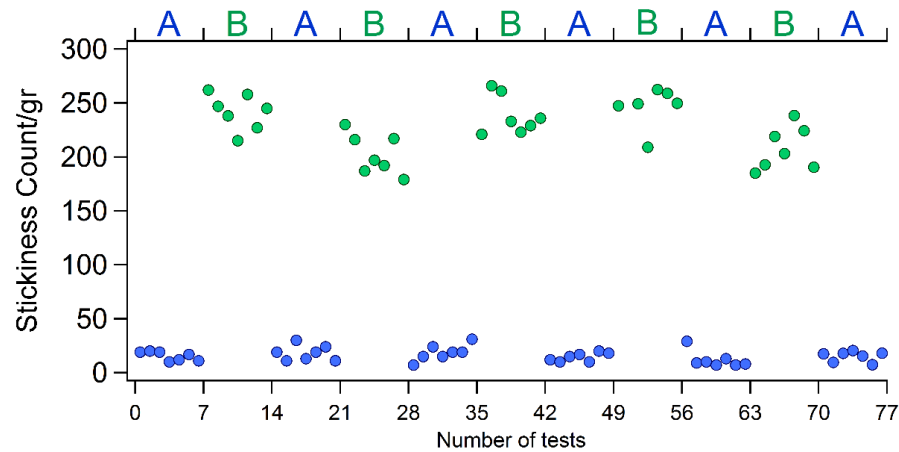
CONTEST : Stickiness Grade can be an advantage

Sticky point size distribution (31646 tests)

Sticky deposits [Count/gr] :
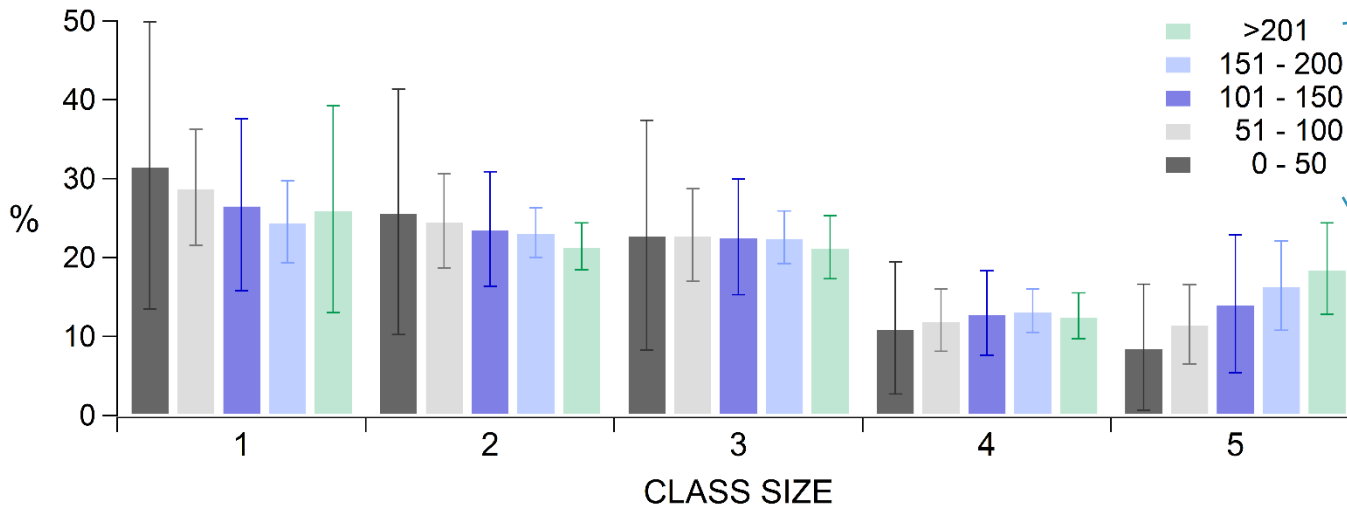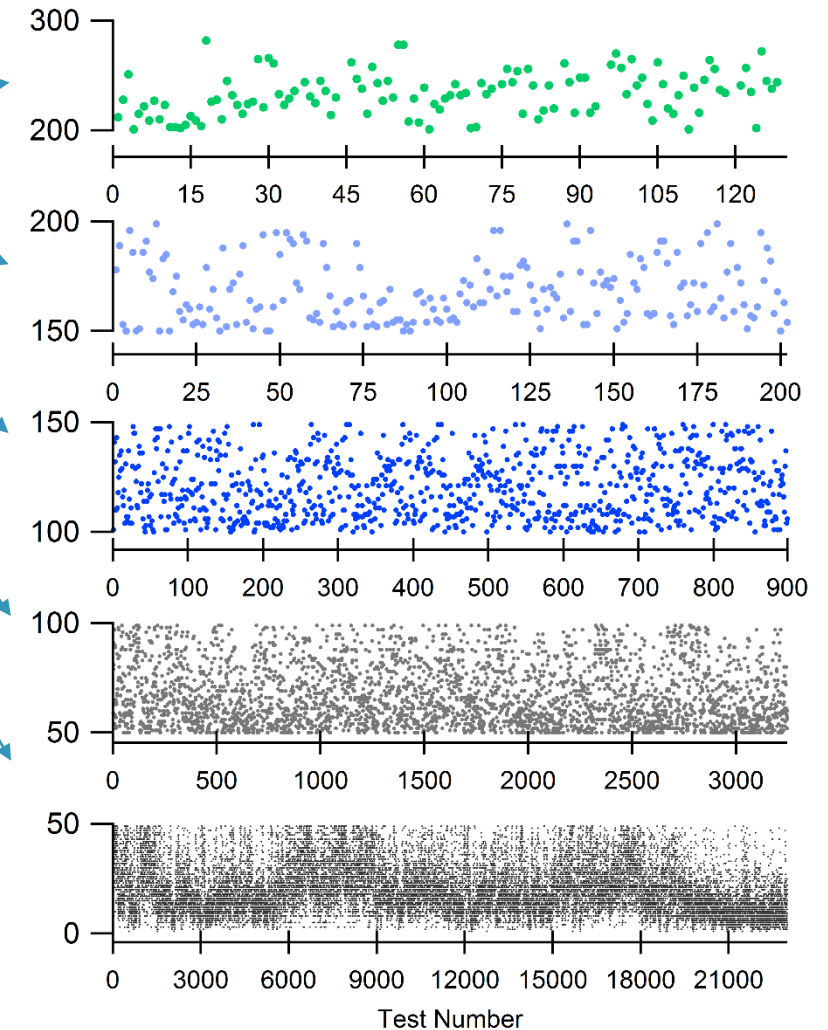
- >201
- 151 - 200
- 101 - 150
- 51 - 100
- 0 - 50

$$\text{Stickiness Grade } = \sum_{i=1}^{5} \alpha_i S_i$$

S_i = Stickiness Count/gr for Class i

i = Class Size (1 = small, 5 = big)

CONTEST : Stickiness Round Test (ITMF-ICCTM)

AVERAGE % VARIATION AMONG THE INSTRUMENTS = 13.3 %

Acknowledgments

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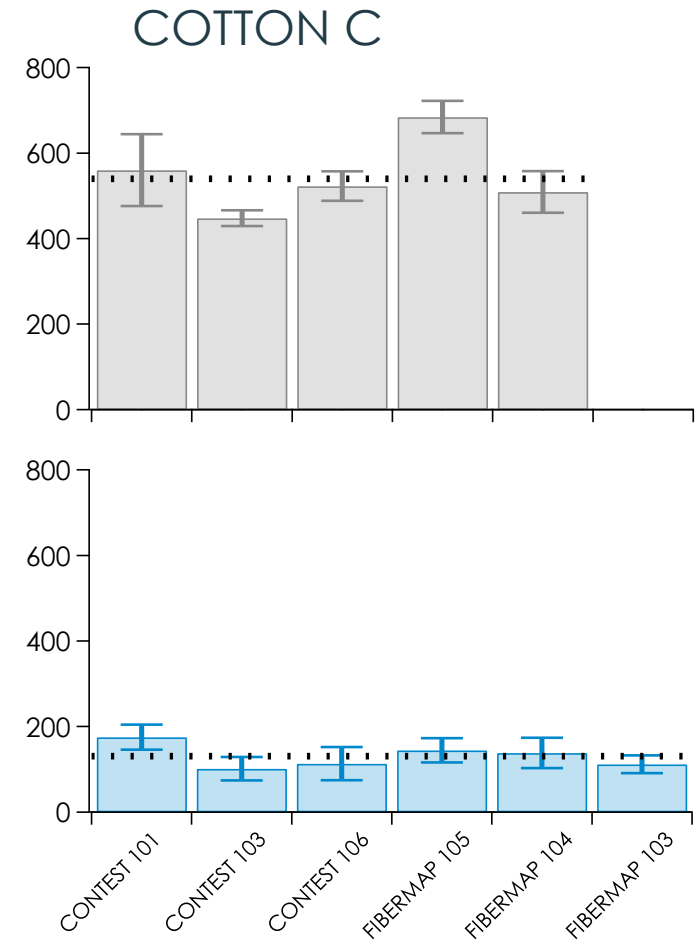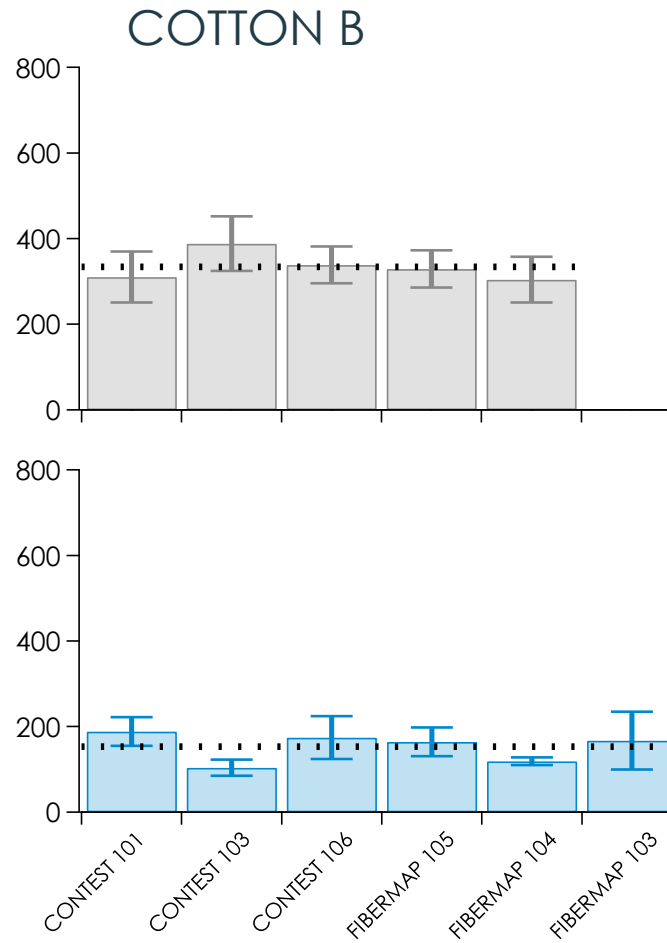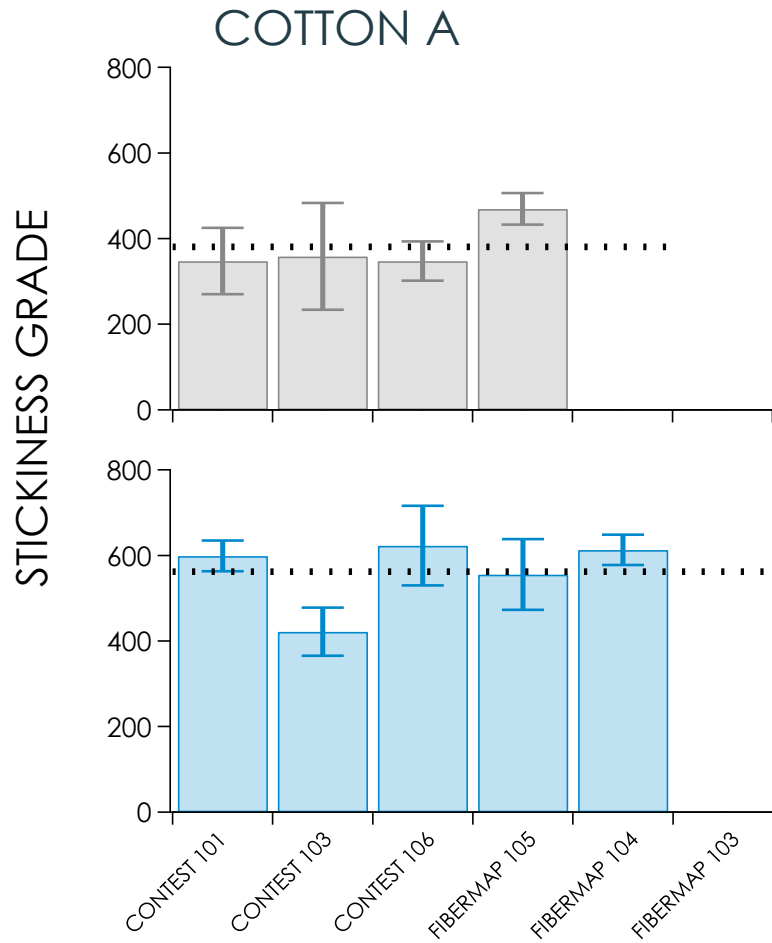
- *Antonio Righettini*
- *Massimo Savoldi*
- *Gianluca Pasinetti*
- *Antonio Zampatti*
- *Marco Musesti*
- *Fabrizio Musesti*
- *Simone Gioia*

Loepfe

- *Demetrio Neri*
- *Cordula Higgins*
- *Ronja Naef*
- *Daniel Sommerhalder*
- *Vidya Sundar*

Thank for the attention

EXTRA MATERIAL

CONTEST : Reliability

HOW MANY TESTS ARE NEEDED TO OBTAIN A RELIABLE EVALUATION ?

- 100 tests on 2 cottons (**STICKY** and **NOT STICKY**)

- 1.000.000 different combinations per each cotton

2 subsamples

Test number : 1, 2, 3, 4, … , 97, 98, 99, 100

3 subsamples

4 subsamples

5 subsamples

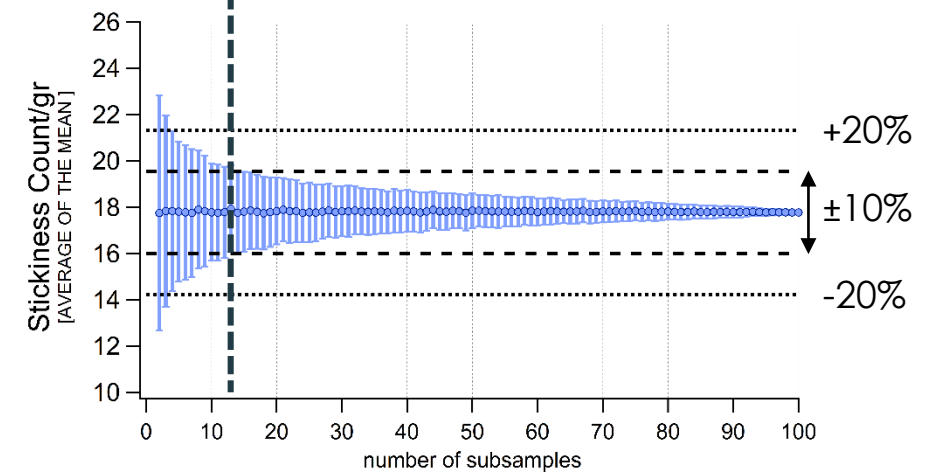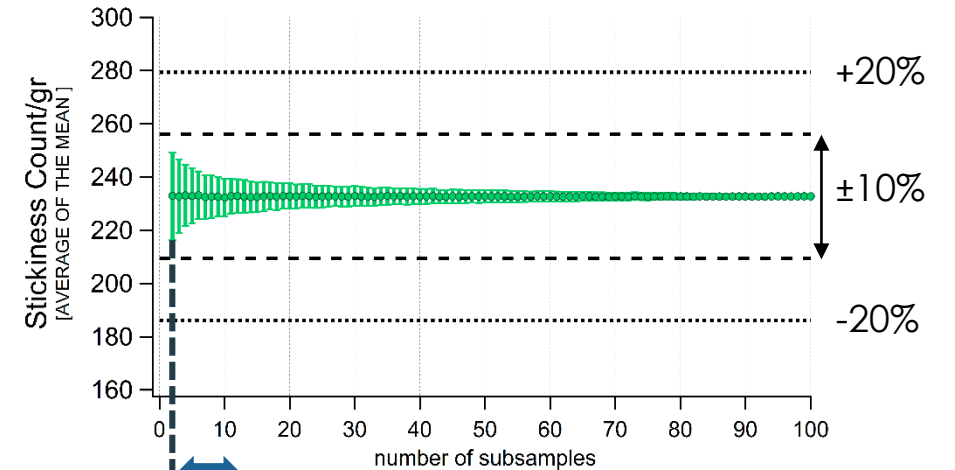…

99 subsamples

CONTEST : Stickiness Round Test (ITMF-ICCTM)

RT	COTTON	INSTRUMENT	STICKINESS GRADE [AVG]	Δ	Δ%
2017-1	A	Contest	358.5	22.1	6.2
		Contest	347.5	33.1	9.5
		Contest	347.1	33.5	9.6
		Fibermap	469.3	88.7	18.9
		GRAND MEAN	**380.625**	**AVG**	**11.1**
	B	Contest	388.2	54.2	14.0
		Contest	338.7	4.7	1.4
		Contest	309.8	24.1	7.8
		Fibermap	329.0	5.0	1.5
		Fibermap	304.2	29.8	9.8
		GRAND MEAN	**334**	**AVG**	**6.9**
	C	Contest	447.7	92.1	20.6
		Contest	523.0	16.9	3.2
		Contest	535.2	4.7	0.9
		Fibermap	684.2	144.3	21.1
		Fibermap	509.2	30.7	6.0
		GRAND MEAN	**539.852**	**AVG**	**10.4**

AVERAGE Δ% = 13.3 %

RT	COTTON	INSTRUMENT	STICKINESS GRADE [AVG]	Δ	Δ%
2017-2	A	Contest	598.7	36.3	6.1
		Contest	421.8	140.6	33.3
		Contest	623.0	60.6	9.7
		Fibermap	555.3	7.1	1.3
		Fibermap	613.2	50.8	8.3
		GRAND MEAN	**562.400**	**AVG**	**11.7**
	B	Contest	188.3	35.5	18.9
		Contest	103.8	49.0	47.2
		Contest	174.3	21.5	12.3
		Fibermap	164.3	11.5	7.0
		Fibermap	118.8	34.0	28.6
		Fibermap	167.2	14.4	8.6
		GRAND MEAN	**152.783**	**AVG**	**20.4**
	C	Contest	175.0	44.3	25.3
		Contest	101.5	29.2	28.8
		Contest	113.3	17.4	15.4
		Fibermap	144.3	13.6	9.4
		Fibermap	138.2	7.5	5.4
		Fibermap	112.0	18.7	16.7
		GRAND MEAN	**130.717**	**AVG**	**16.8**

CONTEST : Temperature of Drum Surface

35.33 ± 0.43 °C

35.16 ± 0.37 °C

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