

**INTERNATIONAL
COTTON
CONFERENCE
BREMEN**

2024



20 - 22 MARCH 2024 | BREMEN PARLIAMENT HOUSE

PRESENTATION

Session:

Cotton Quality And Testing

Title:

Non-lint Impurities Impact on Cotton Fiber Quality Measurement

Speaker:

Mourad Krifa, School of Fashion, Kent State University (USA)

Conference Organisation

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Non-lint Impurities Impact on Cotton Fiber Quality Measurement



*Mourad Krifa, Kent State University
Chris Delhom, USDA - ARS
Neha Kothari, Cotton Incorporated
22 March 2024*

Non-Lint Impurities

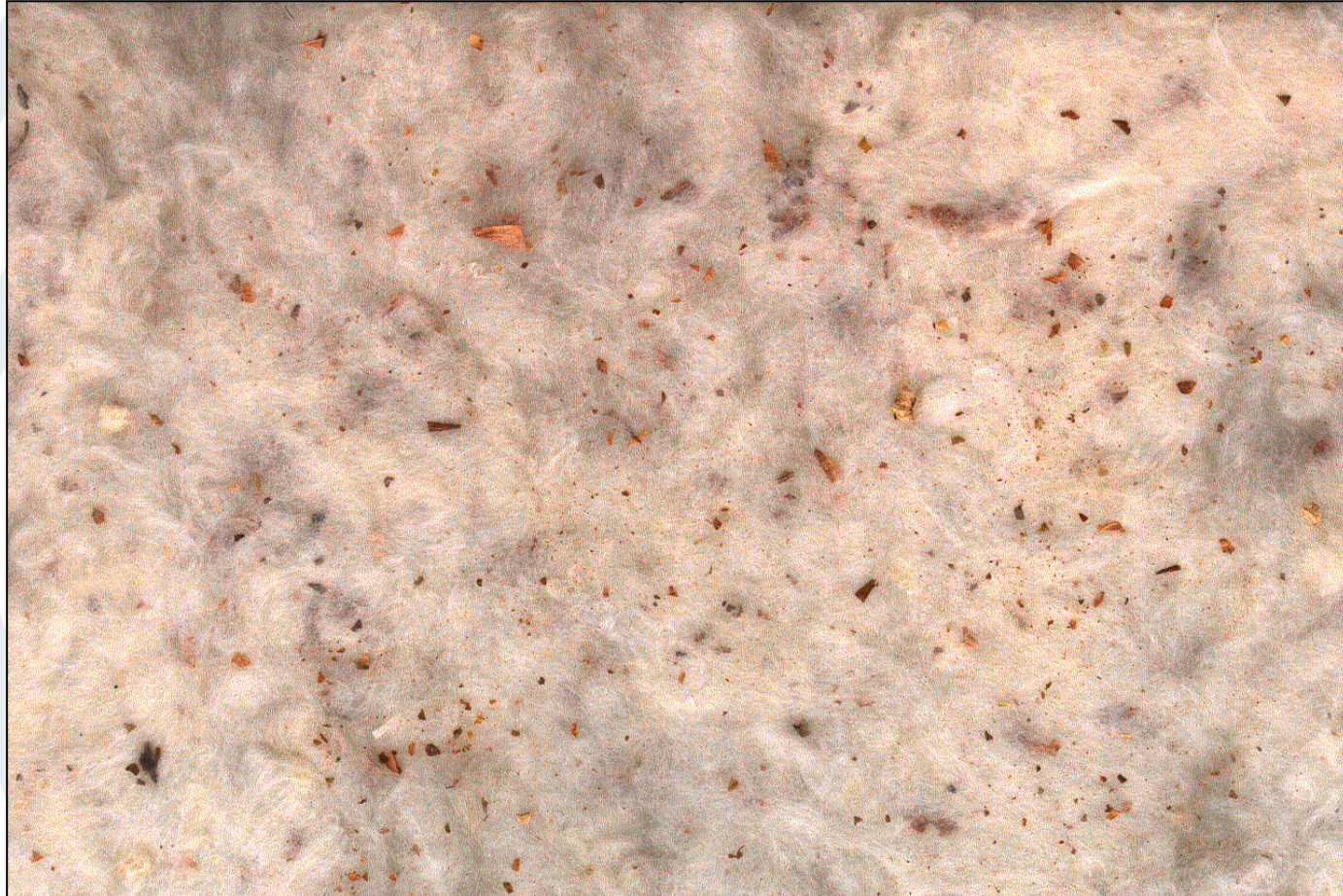
- **Varied origins, types**
- **Impacts on**
 - ***Value***
 - ***Processability***
 - ***Quality of yarn and fabric***
- **Interaction Effects**



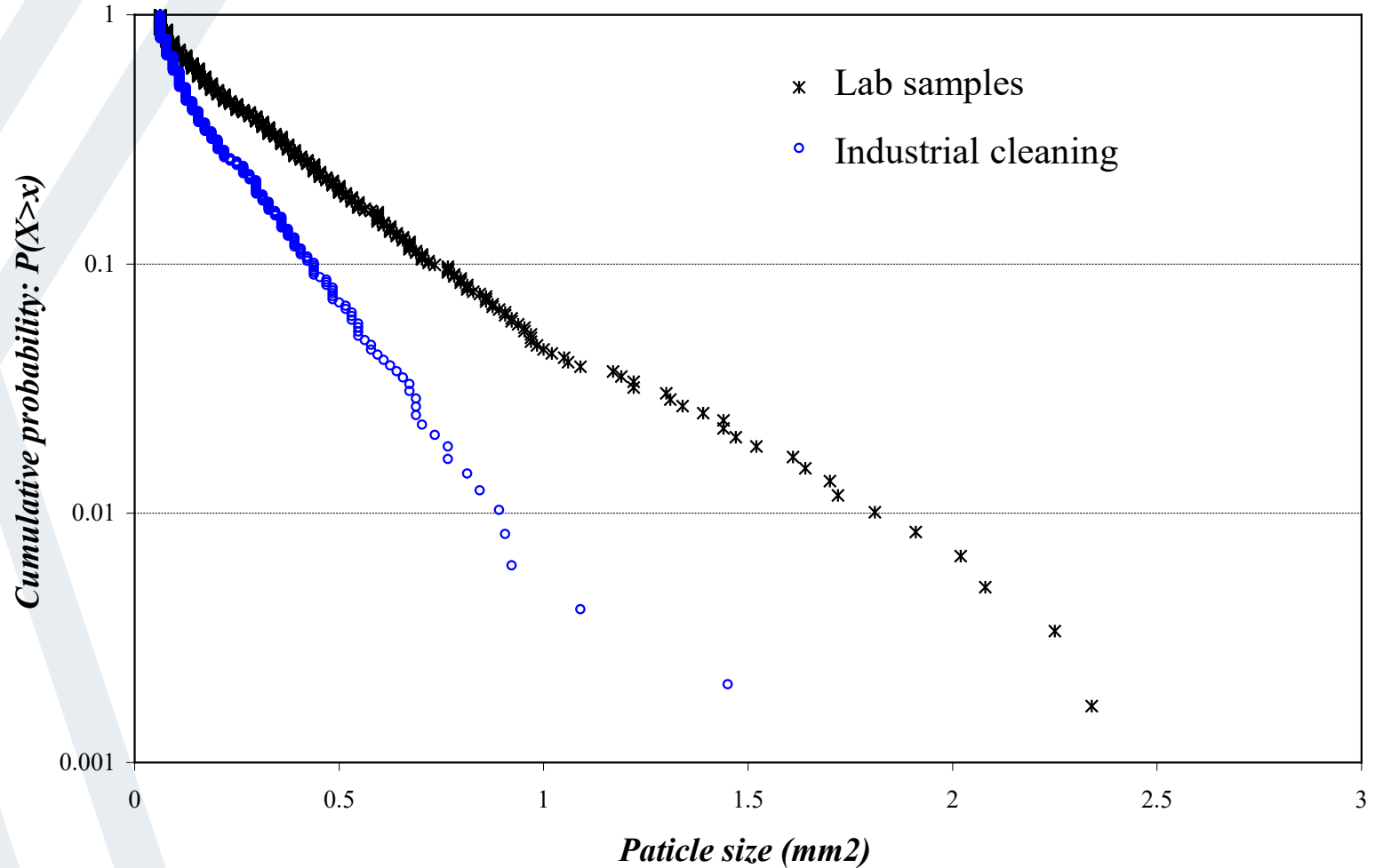
- **Interaction Effects**
 - **Ranking of genotypes**
 - **Predicting quality**
 - **Cleaning efficiency**



Breeders Samples

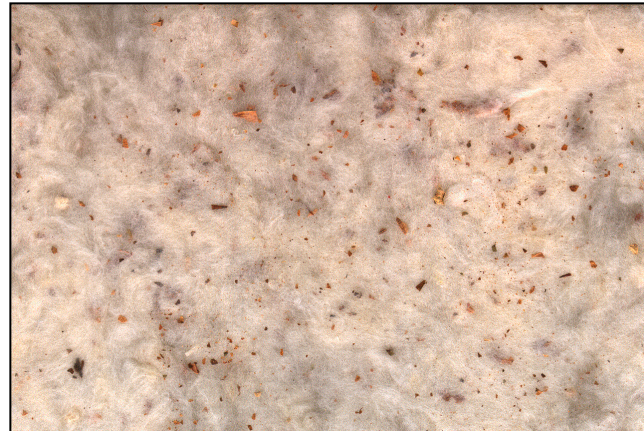


Non-Lint Impurities



Non-Lint Impurities

- **Interaction Effects – Fiber quality measurement**
 - **HVI Strength measurement (Gourlot, et al.)**
 - **HVI Micronaire measurement (Liu & Delhom)**

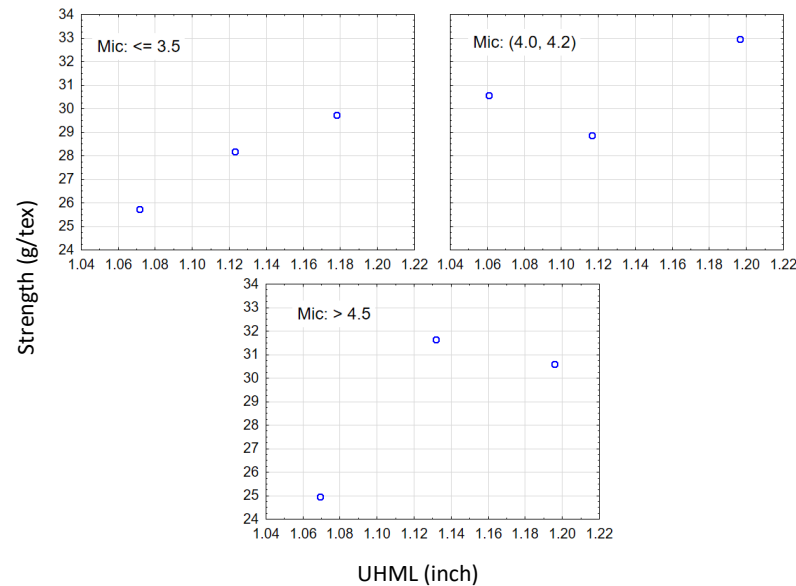


Non-Lint Impurities

- **Interaction Effects – Fiber quality measurement**
 - **Quantitative thresholds?**
 - **Types of impurities?**
 - **Morphological characteristics?**
- ➔ ***Explore the variability attributable to the presence of impurities of different natures***



- **Controlled experiment**
 - **Lint samples with a range of fiber properties**
 - **USDA-ARS New Orleans inventory, ARS Gin Labs**



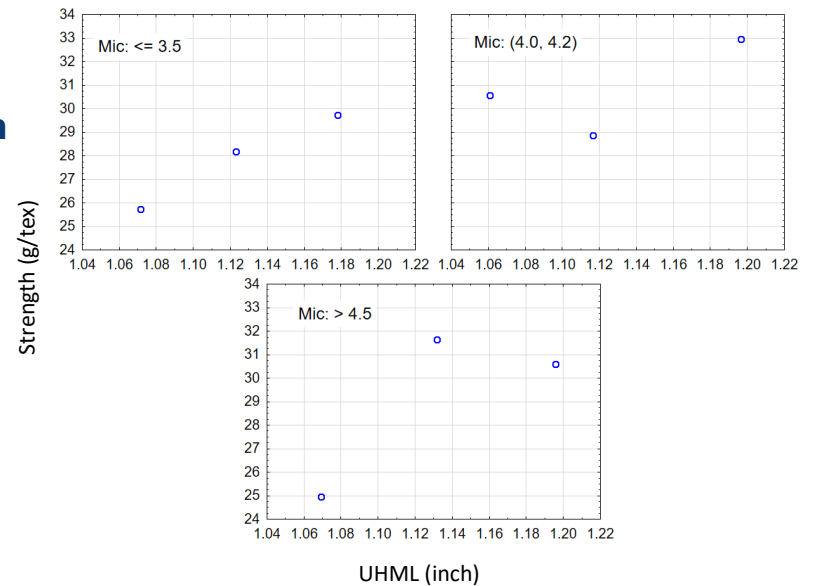
- **Controlled experiment**

- **Lint samples with a range of fiber properties**
- **USDA-ARS New Orleans inventory, ARS Gin Labs**
- **Trash samples**

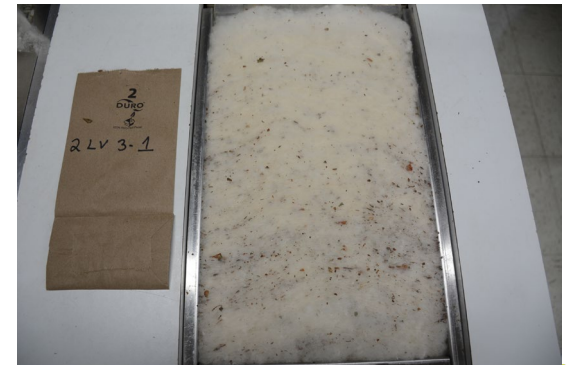
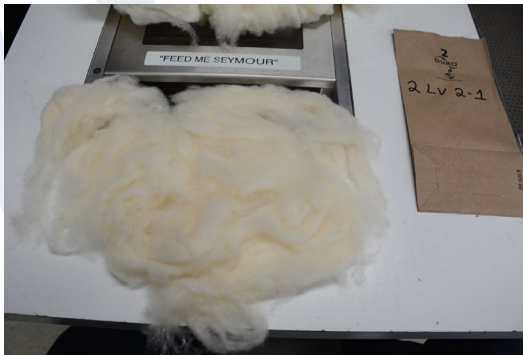
- **Leaves, Burr and sticks, Fine trash**
- **Seed Coat Fragments (card flats)**

USDA Microgin (Stoneville, MS)

Textile Pilot Plant (New Orleans, LA)



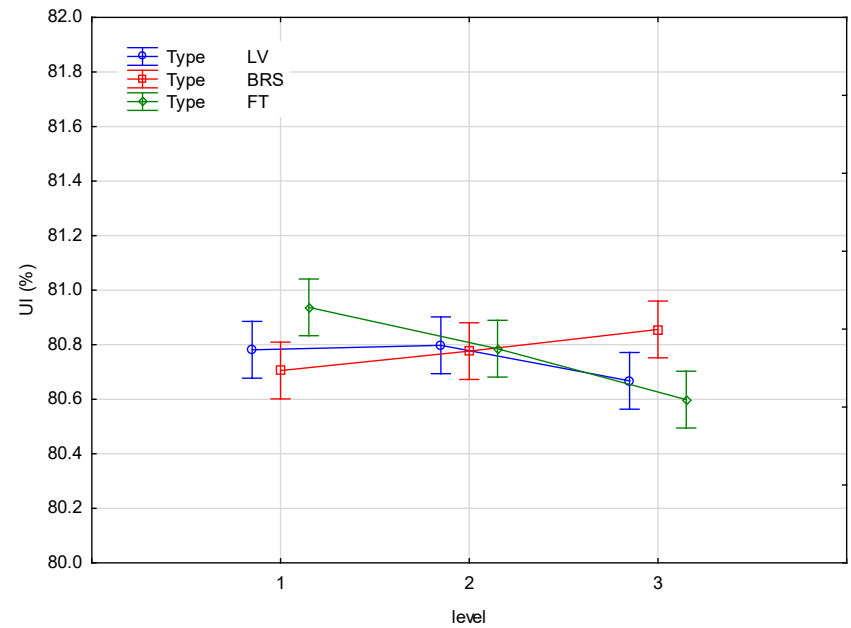
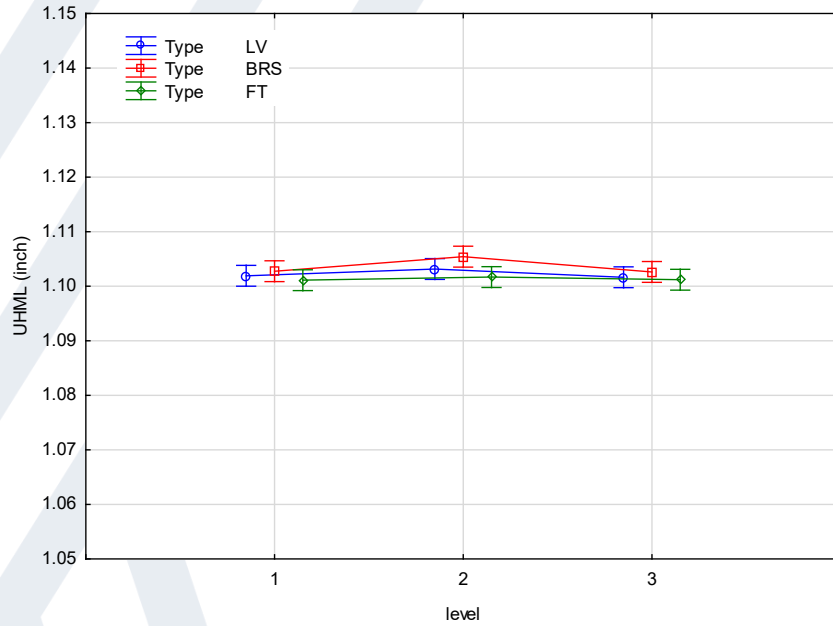
- **Controlled experiment**
 - **Lint samples cleaned: SpinLab Opener/Blender, Shirley Analyzer**
 - **Trash samples “implanted” into clean lint**
 - *3 levels, 5 reps*
 - *HVI (4, 10, 10)*



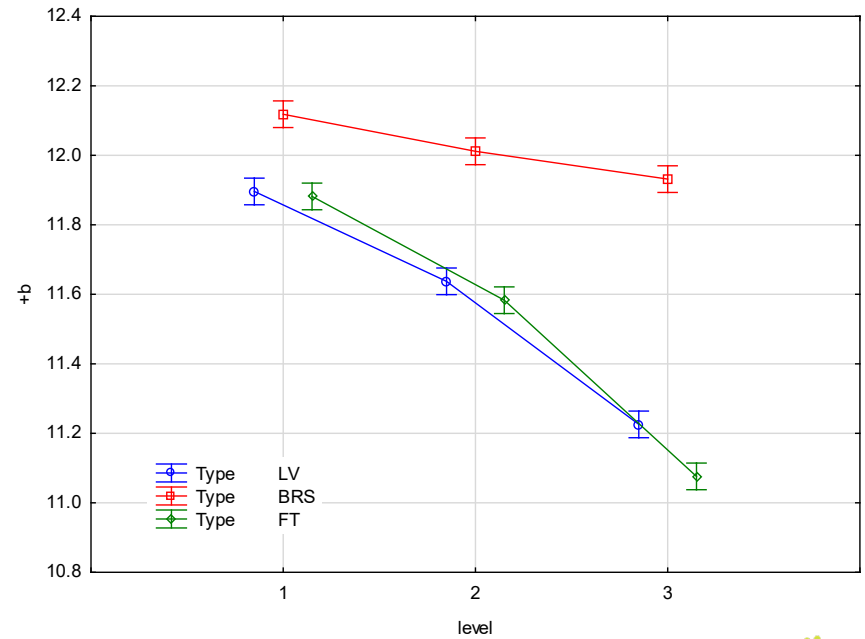
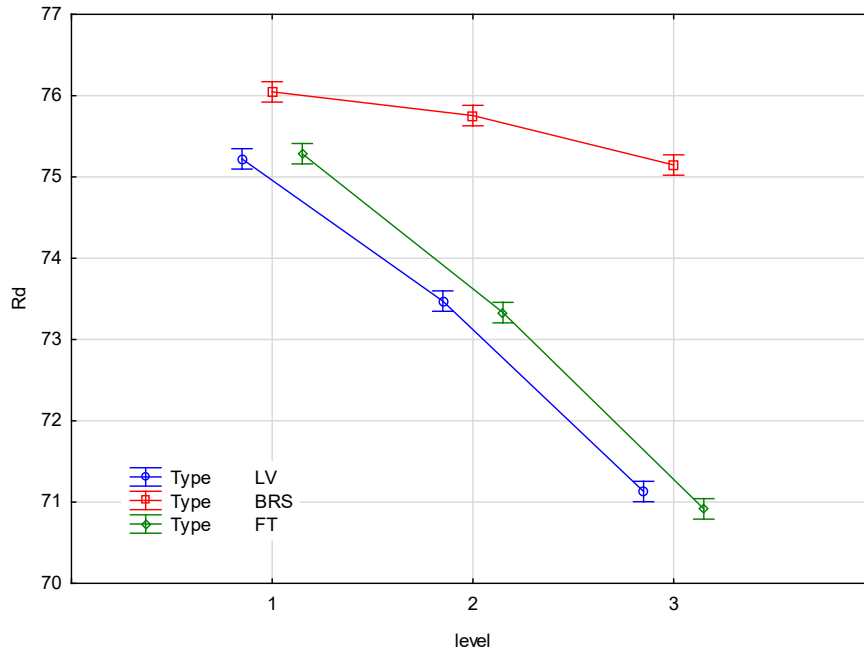
- **Controlled experiment**
 - **Lint samples cleaned: SpinLab Opener/Blender, Shirley Analyzer**
 - **Trash samples “implanted” into clean lint**
 - *3 levels, 5 reps*
 - *HVI (4, 10, 10)*
 - **Variability of HVI results (GLM)**
 - **Micronaire, Length, Strength, Color**



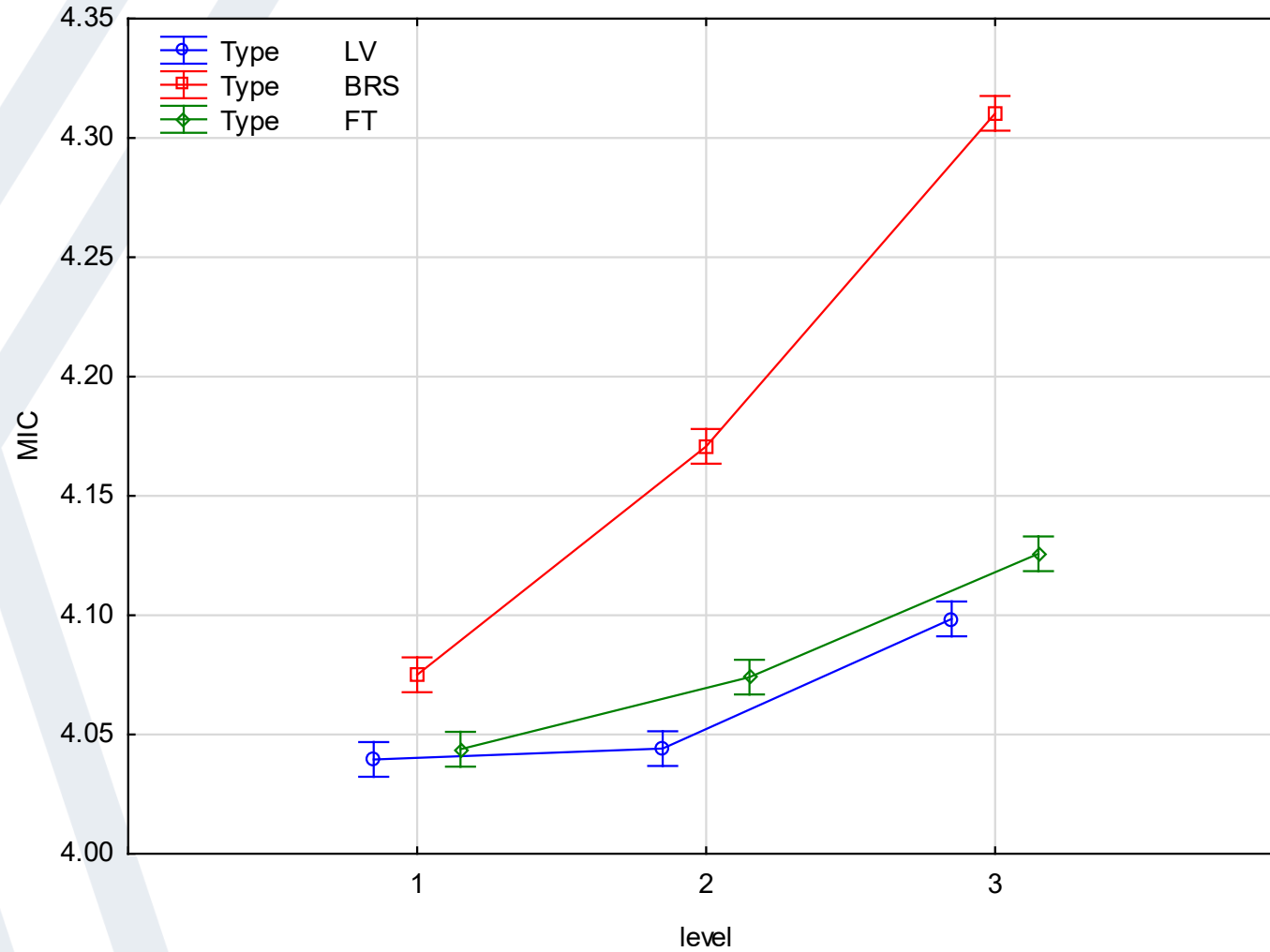
Results - Length Parameters



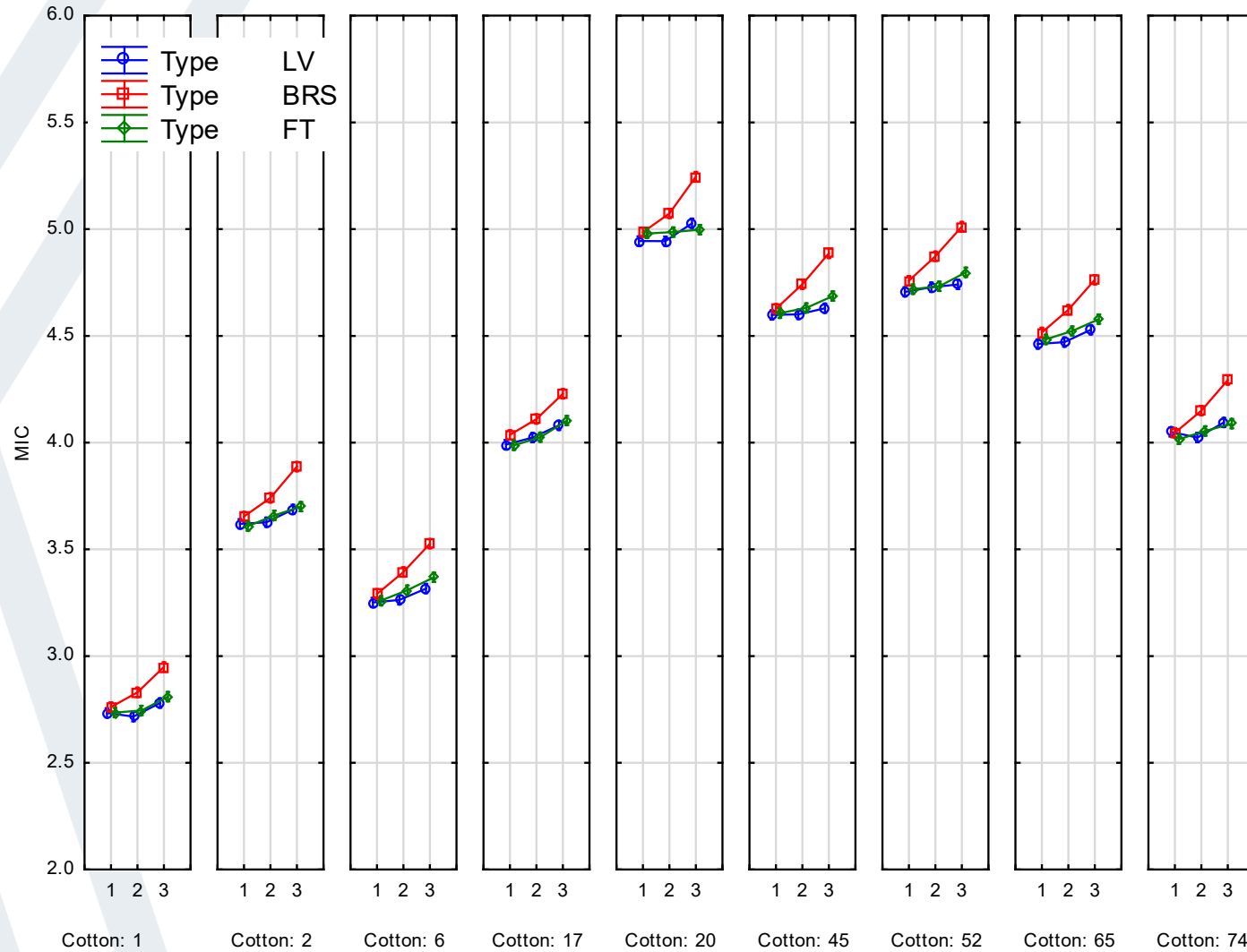
Results - Color



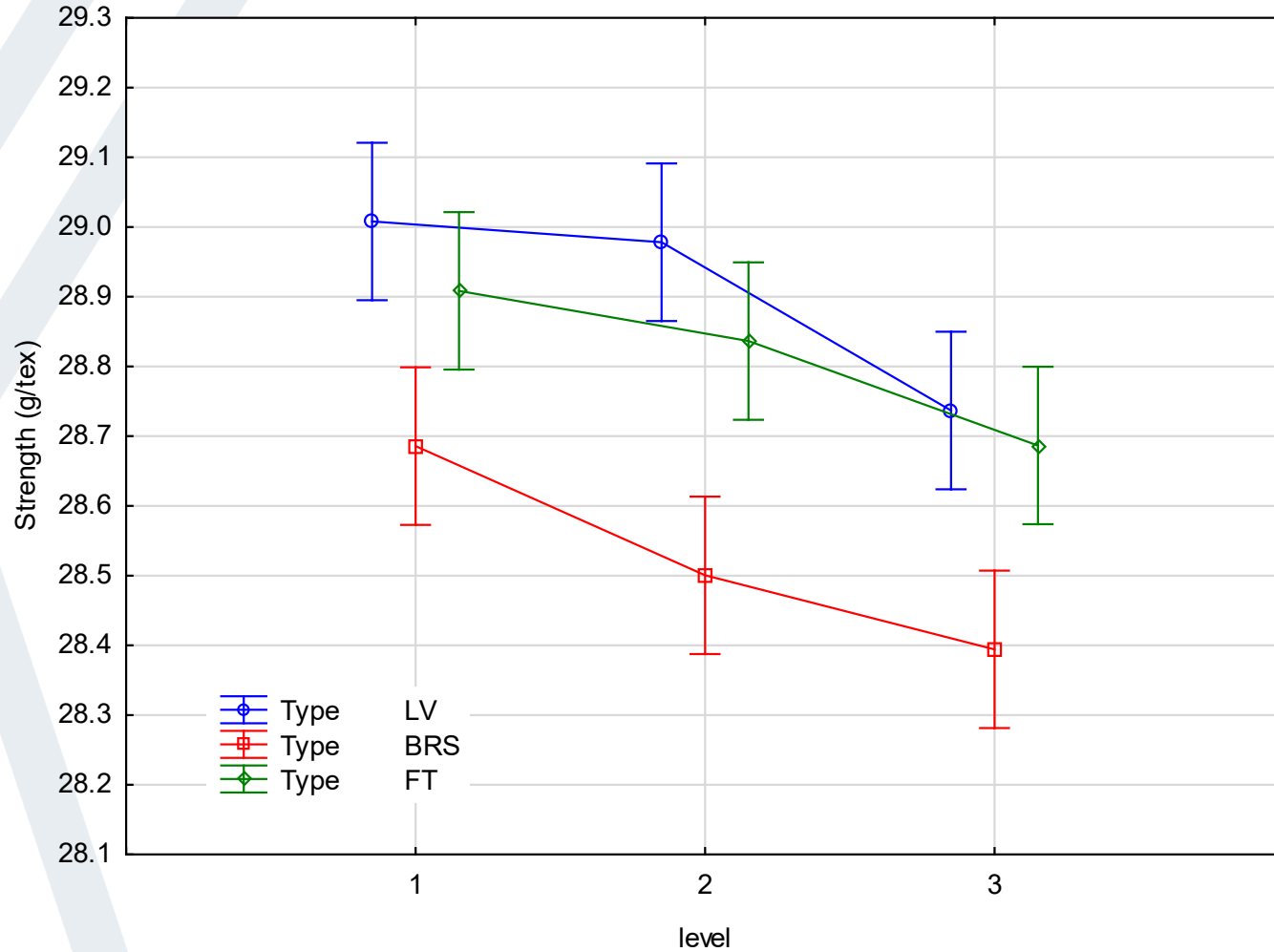
Results - Micronaire



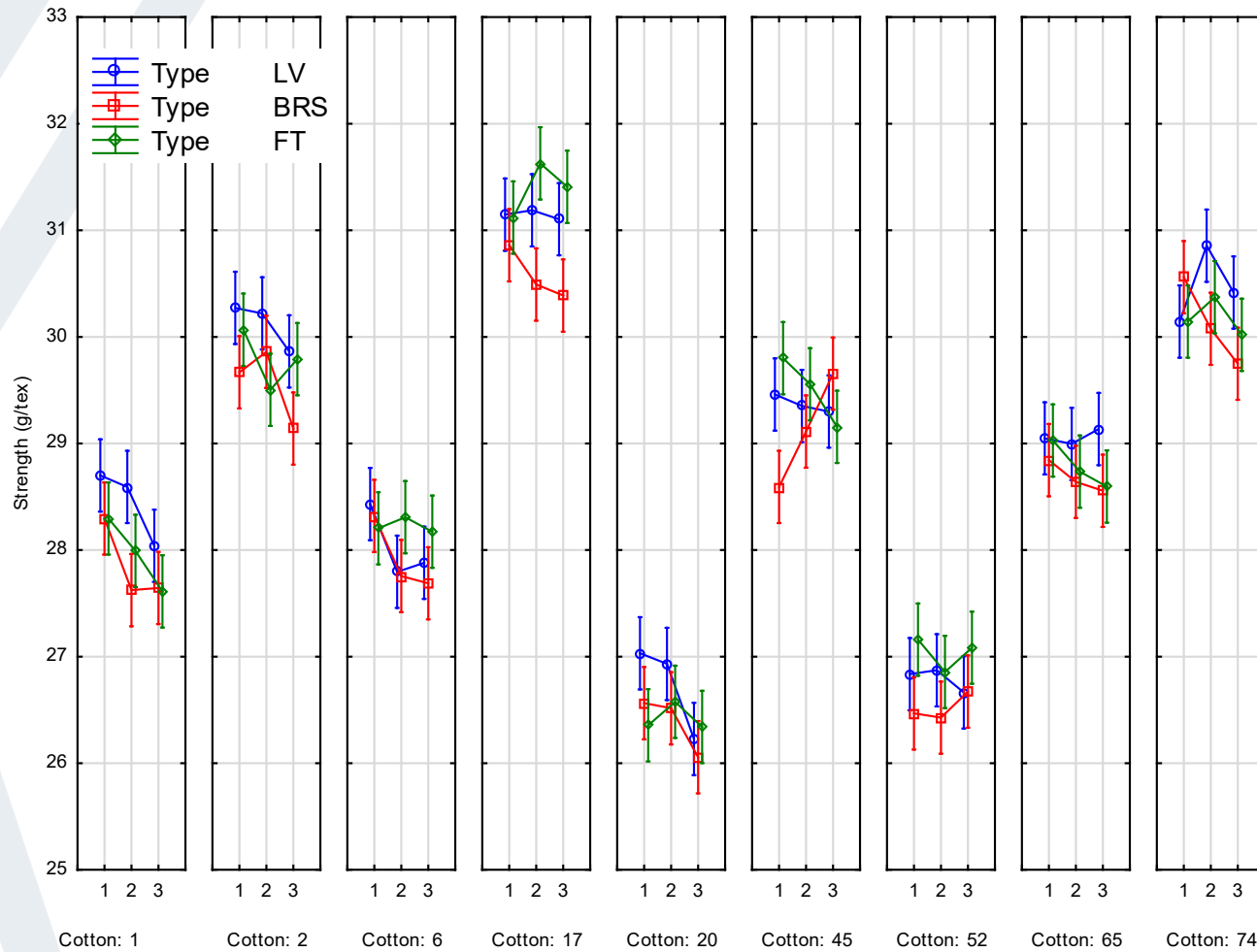
Results - Micronaire



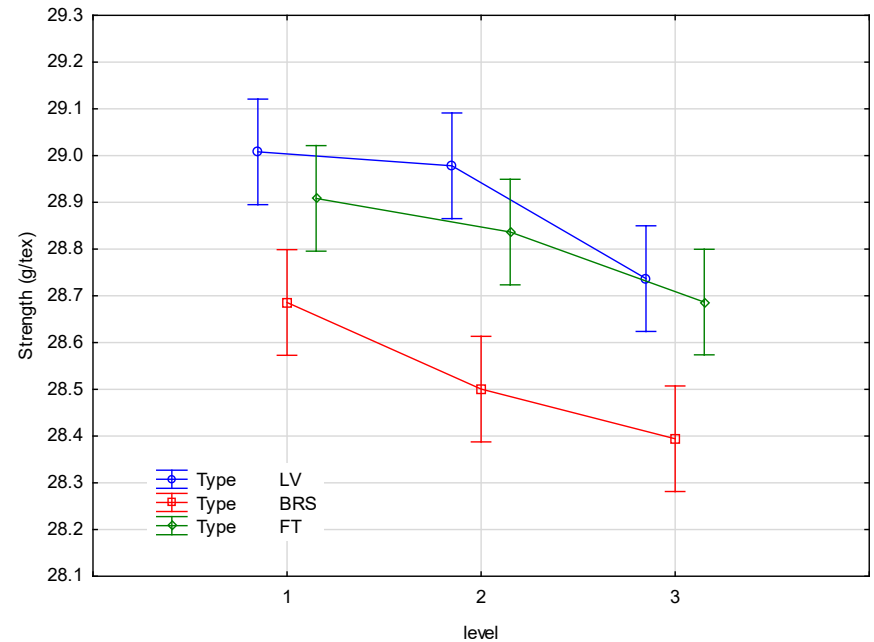
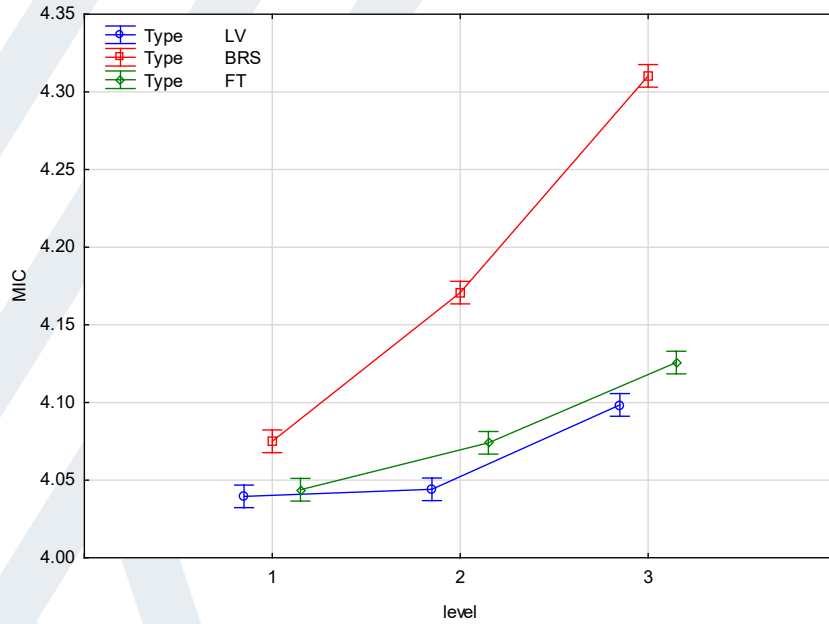
Results - Strength



Results - Strength



Results - Micronaire/Strength



- **Controlled experiment**
 - **Impurities “implanted” into clean lint**
 - **Characterize variability attributable to non-lint impurities**
 - **Leaves, Burr and sticks, Fine trash, (Seed Coat Fragments)**
- **HVI fiber properties**
 - **Length & UI not impacted**
 - ***Apparent significant impact on Micronaire, and Strength***
 - ***Interaction with type of impurities***
 - ***Quantitative threshold analysis in progress***



Thank You!

