

INTERNATIONAL
**COTTON
CONFERENCE
BREMEN**

2024



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PRESENTATION

Session:
Cotton Quality And Testing

Title:
Cotton laydown management in spinning mills

Speaker:
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Conference Organization

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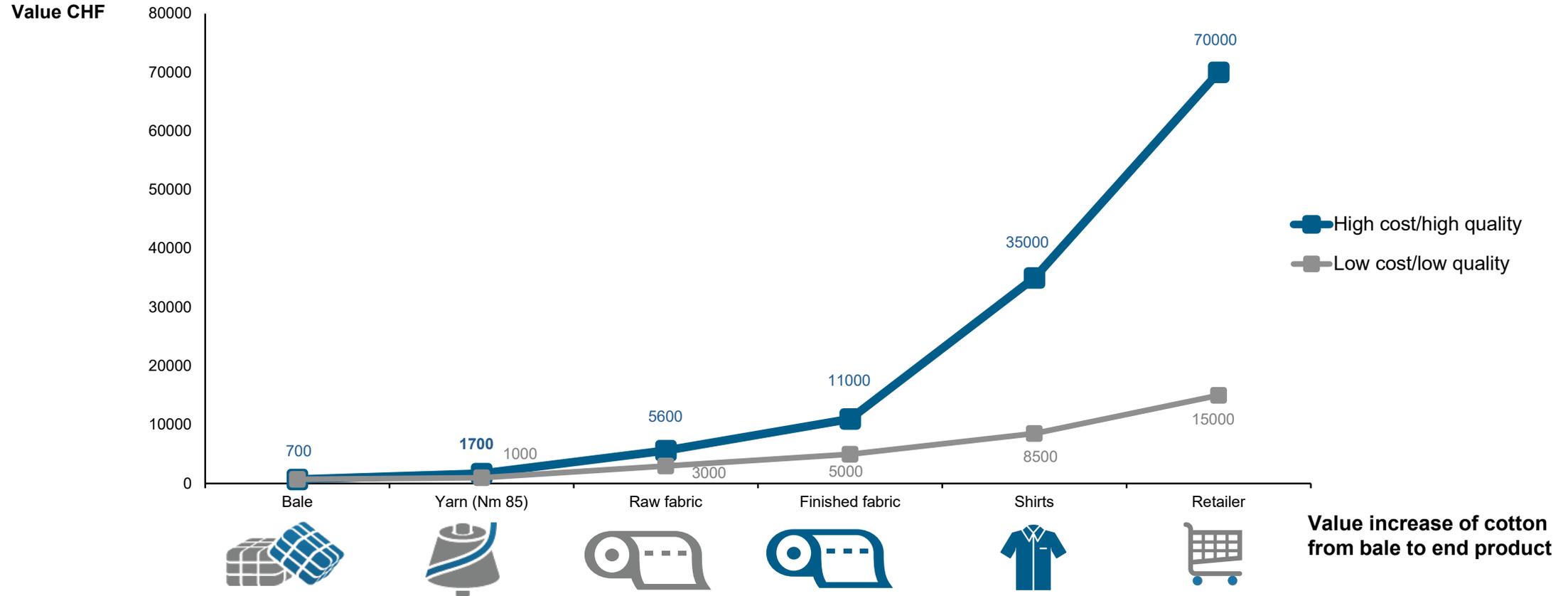
Uster Technologies AG

Cotton laydown management in spinning mills

Quality = added value

Value added in the textile chain (shirt manufacturing)

Quality translates into significant price differences



Source: Bremen Cotton Conference 2000, Blum & Schöller, Uster Technologies

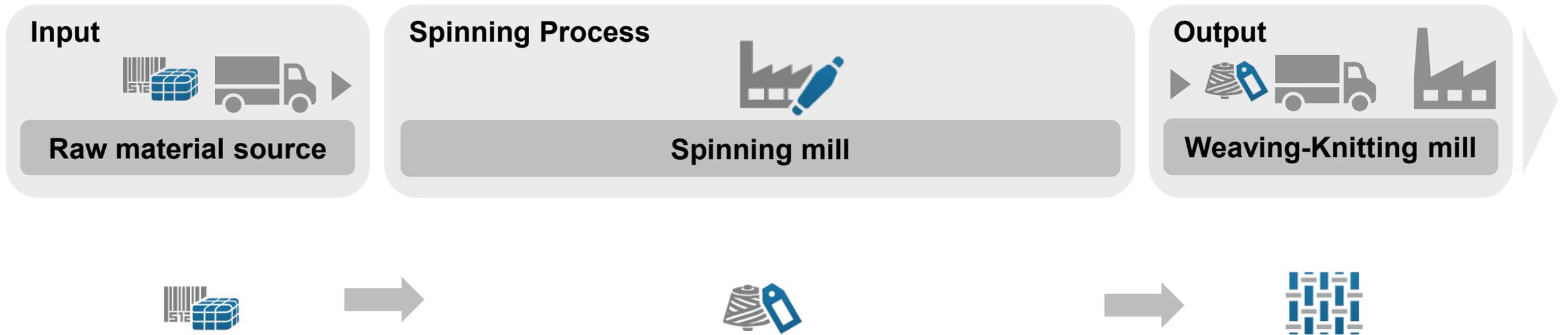
Enable spinning mills to achieve the right quality

An efficient bale management solution requires :

- Accurate and reliable fiber characteristics measurement!
- An efficient, easy, application-driven and smart way to utilize results and data from the measurements.
- The know-how to make the best selection of material, based on data for the specific needs of the application.
- All the above factors should be consistent and repeatable, independent of changes in personnel or cotton types.
- The solution should be suitable for different spinning processes, as well different applications.

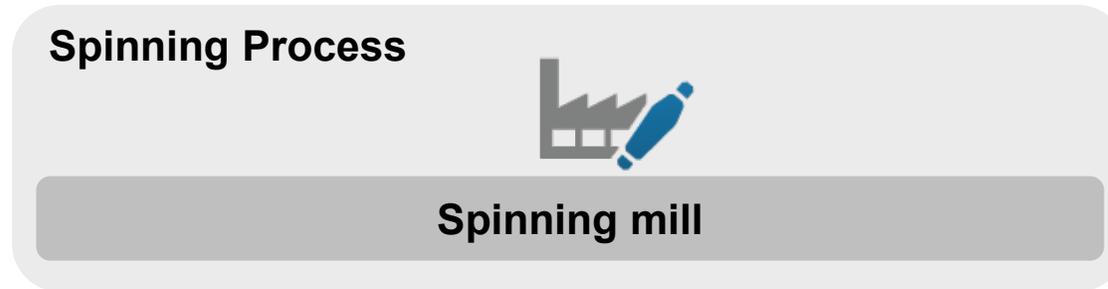
Raw material is the key for the yarn quality

Yarn is the key for the end product quality



Raw material is the key for the yarn quality

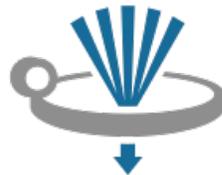
Different spinning systems



Ring



Compact



Rotor



Air jet



Raw material is the key for the yarn quality

Different spinning systems

Ring



Compact



Rotor



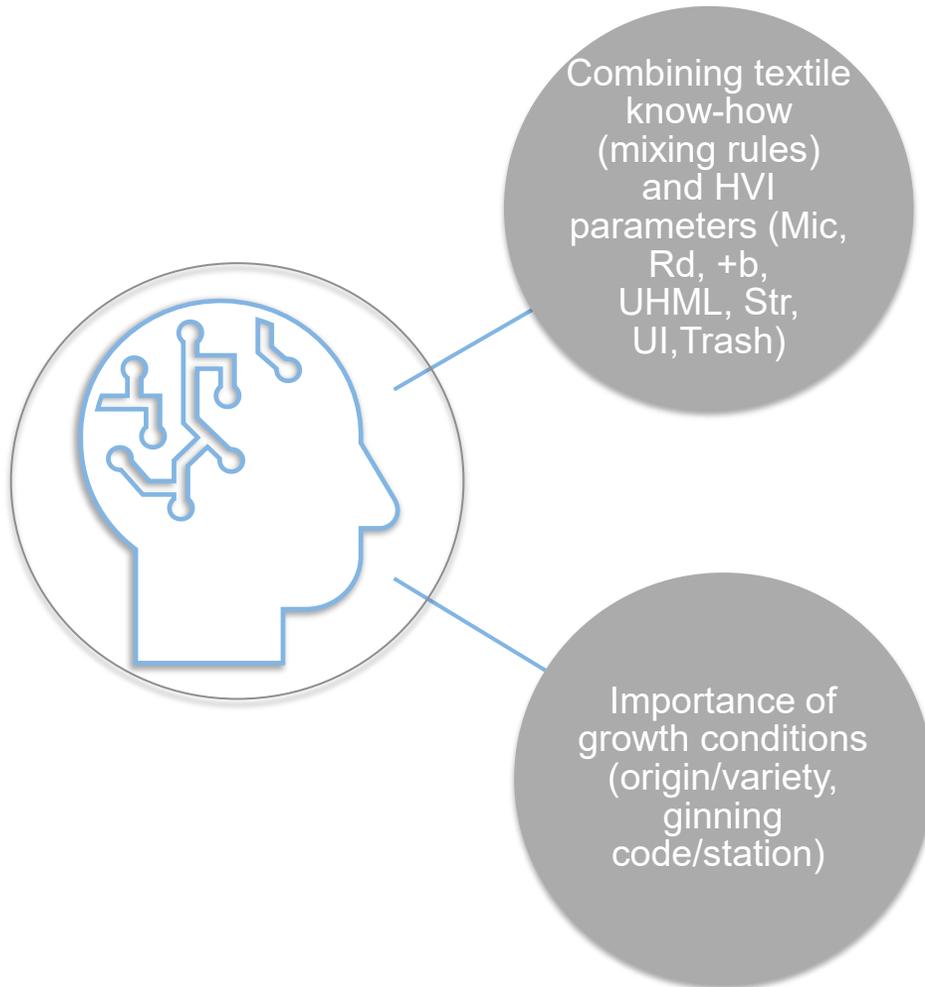
Air jet



Ring	Compact	Rotor	Air jet
Length & Uniformity	Length	Strength	Strength
Strength	Short fiber content	Fineness	Length
Fineness	Strength	Trash content	Trash content
Maturity	Fineness	Length	Fineness
Elongation	Maturity	Length Uniformity	Short fiber content
Trash content	Elongation	Elongation	Maturity
Color	Trash content	Maturity	Color

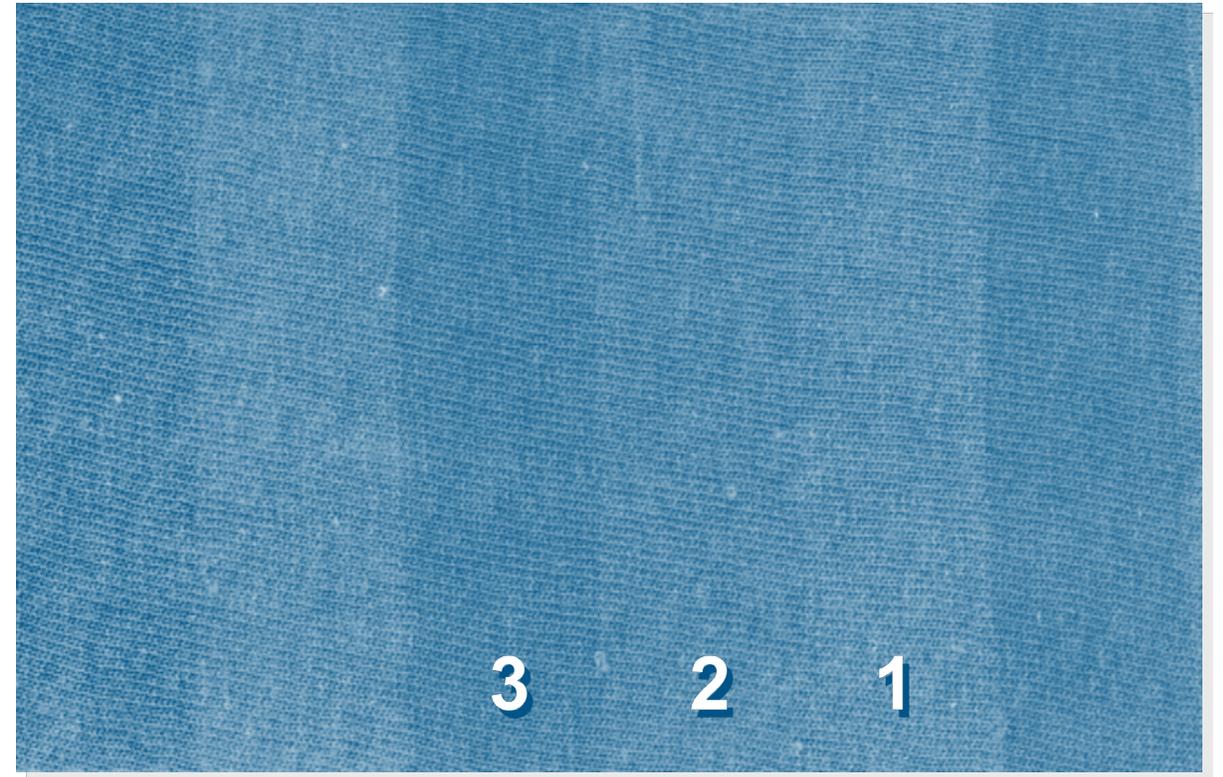
Impact of growth conditions on fabric quality

Practical example: Cotton variety is a critical parameter



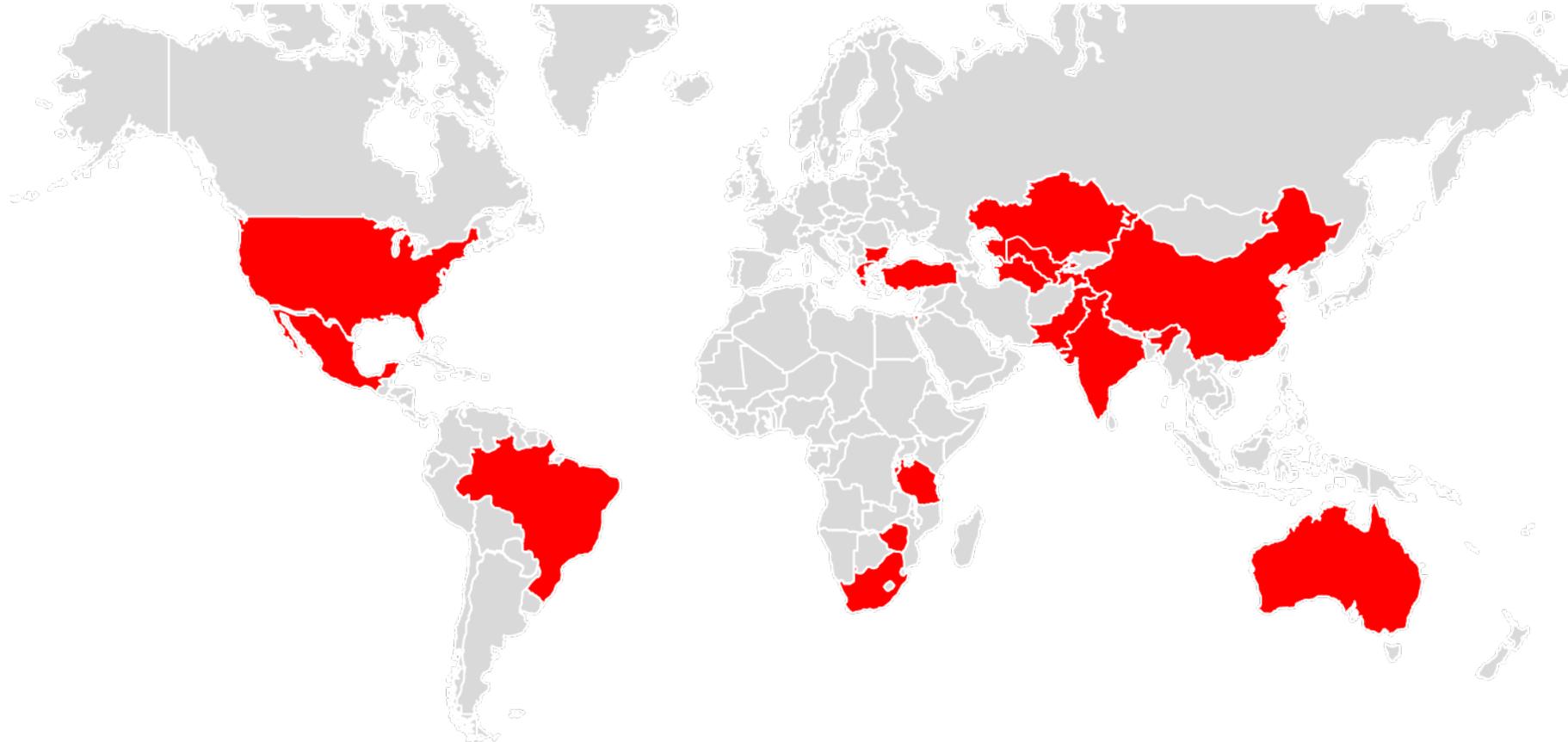
Knitted fabric sample

3 different varieties - same Mic, same growing area leads to varying fabric shades



Worldwide Classing installations

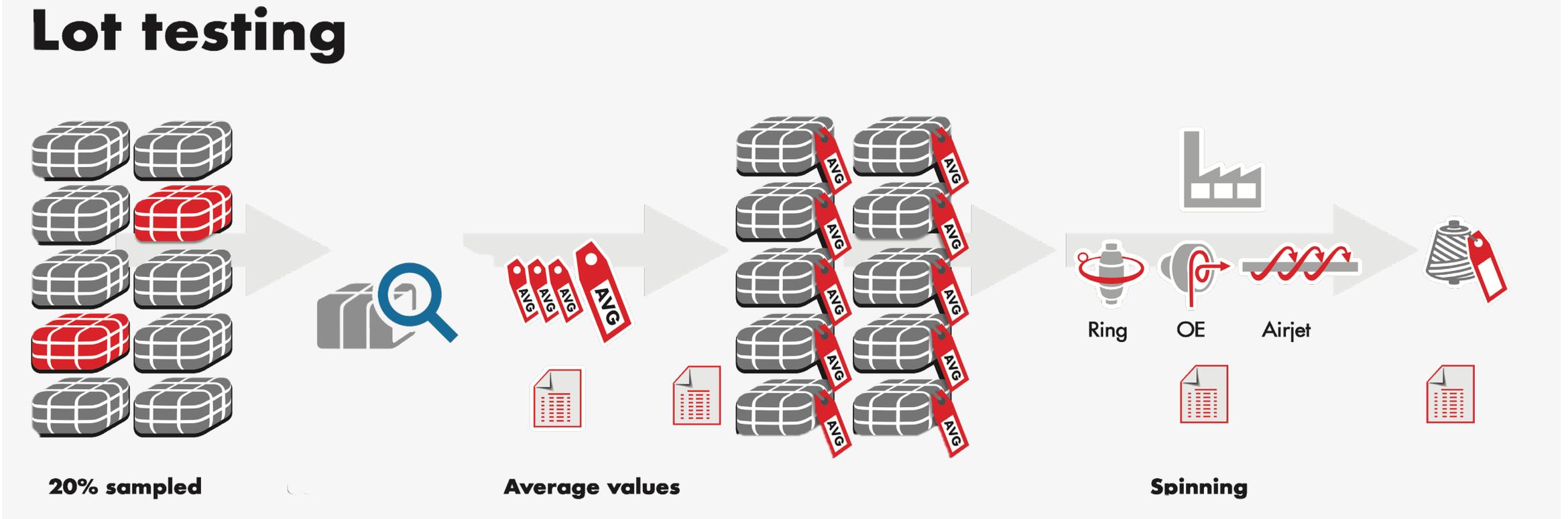
Classification of cotton



● Countries classifying cotton

Lot testing

Partially tested results are assigned to all bales of the lot

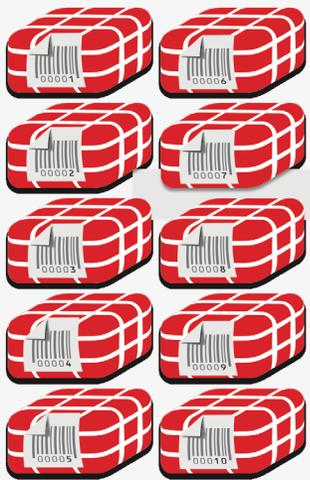


- Mainly for manually picked cottons
- Cotton varieties with minimum growth variation
- Cotton parameters of bales within the lot display minimum variation

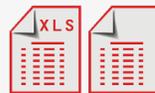
Bale testing

Quality data for each single bale is available

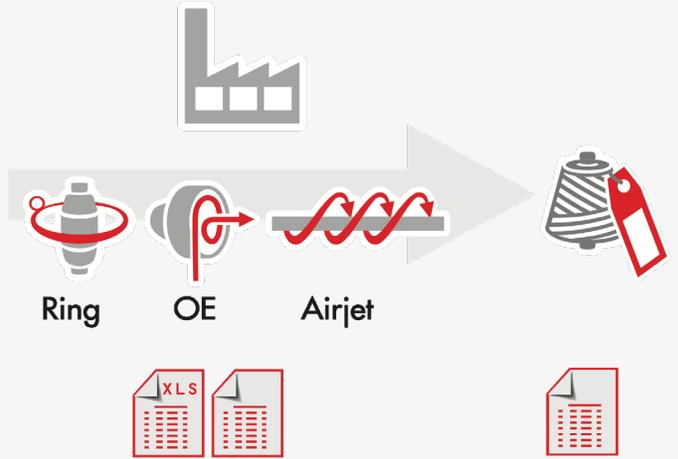
Bale testing



100% analyzed



**Individual values
per bale**



Spinning

- Machine-picked cottons
- Cotton bales from varying growth conditions
- Cotton parameters of bales within the lot or container with more variations

Influence of fiber quality on the spinning process

Impacts of laydown variations on the spinning process

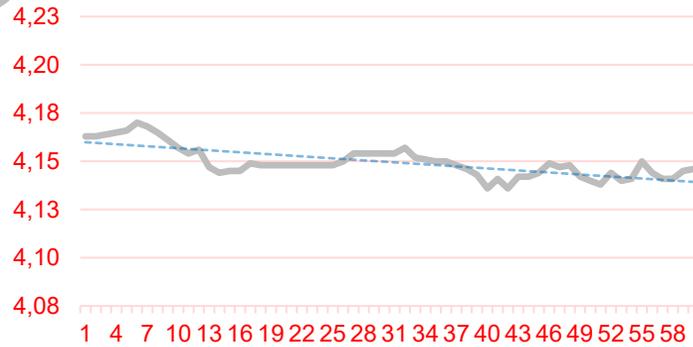
Length and Uniformity variation	Short fiber variation	Micronaire variation
Draft zone performance	Yarn strength	Comber noil variation
Comber noil variation	Evenness	Yarn strength variation
Yarn strength variation	Hairiness	End breaks during spinning
End breaks during spinning	Thick and Thin places	Cleanliness in the spinning mill
Cleanliness in spinning mill	High Classimat faults	Draft zone performance

What is a consistent mix? How can it be controlled?

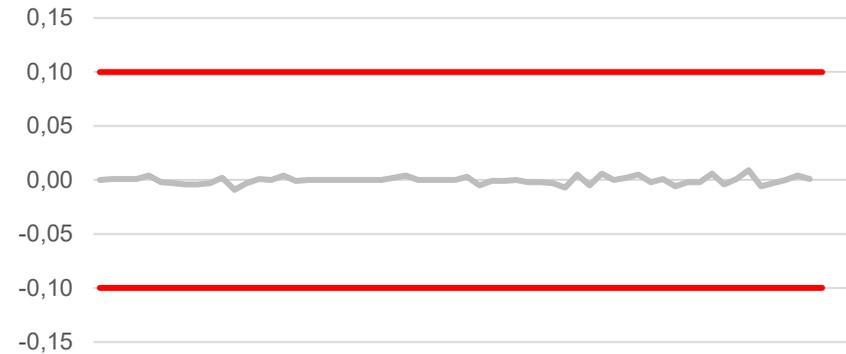
Creating a consistent long-term mix

1

Mic

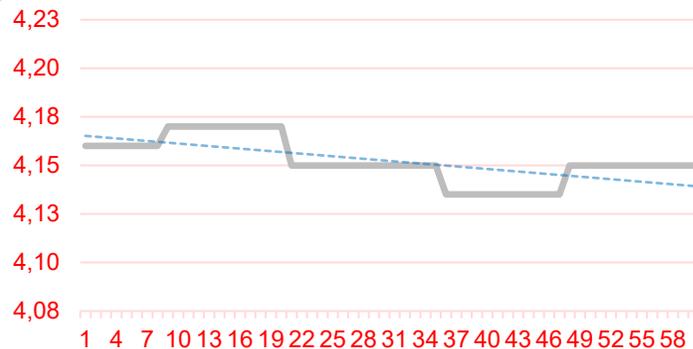


Mic Dif



2

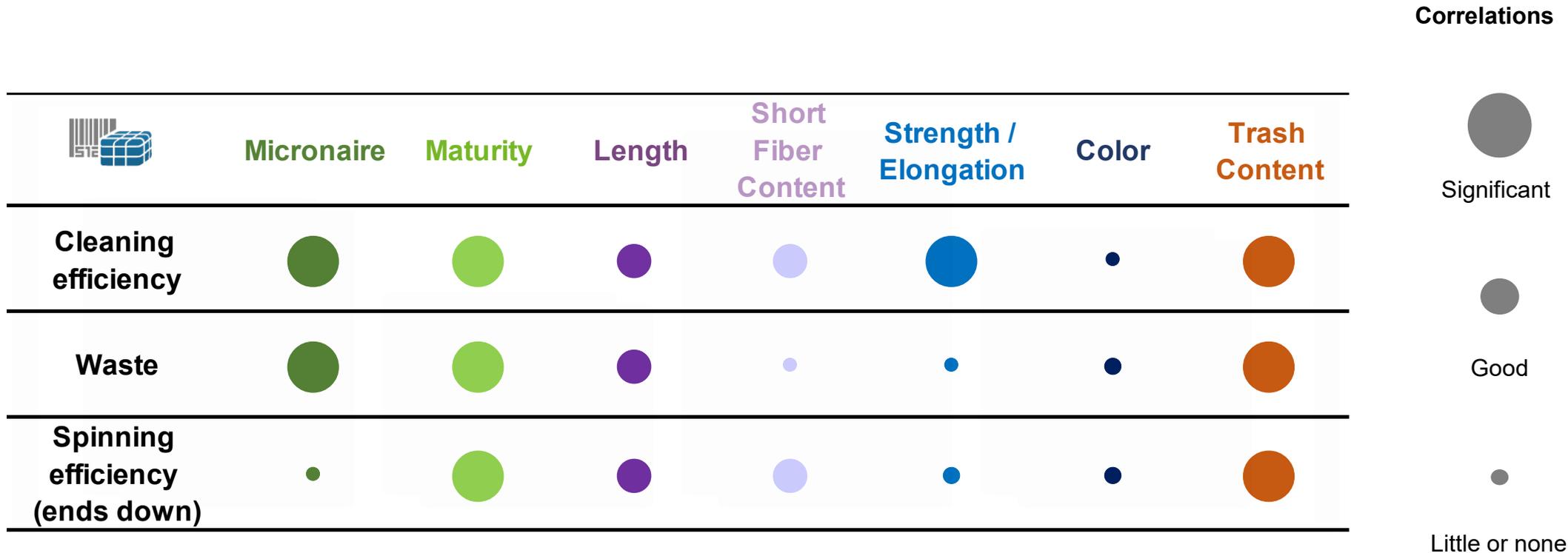
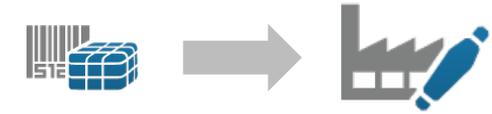
Mic



Mic Dif

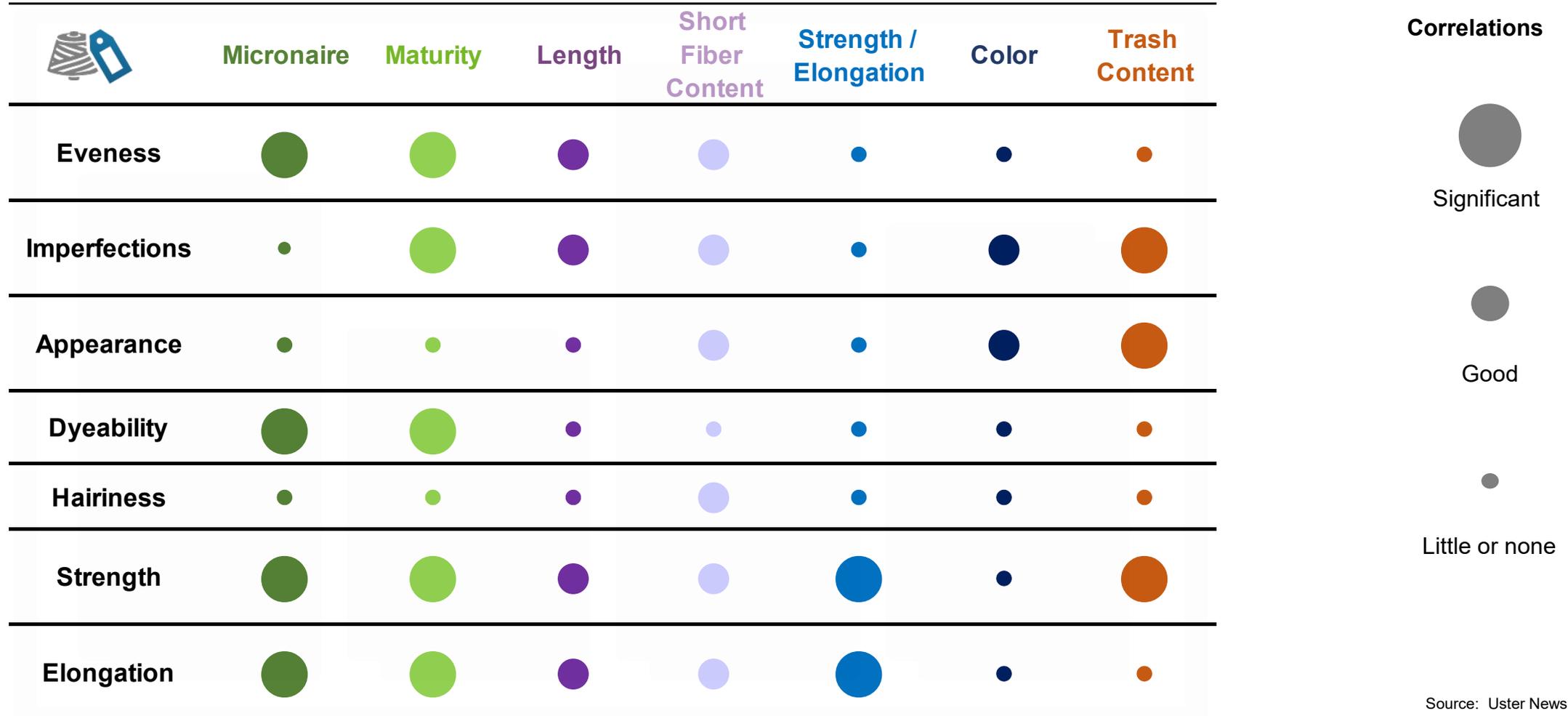


Relationships between fiber properties & spinning process



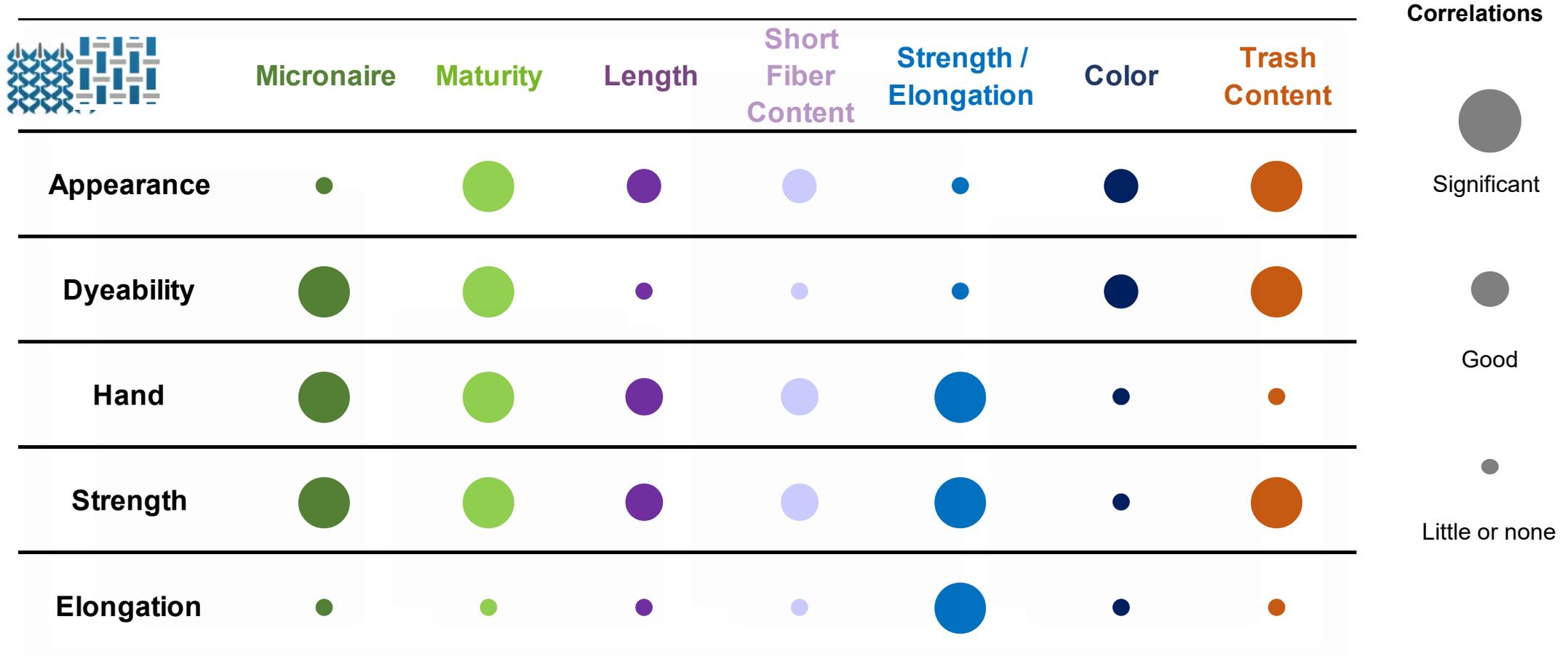
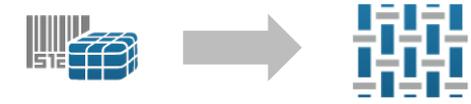
Source: Uster News Bulletin

Relationships between fiber properties & yarn quality



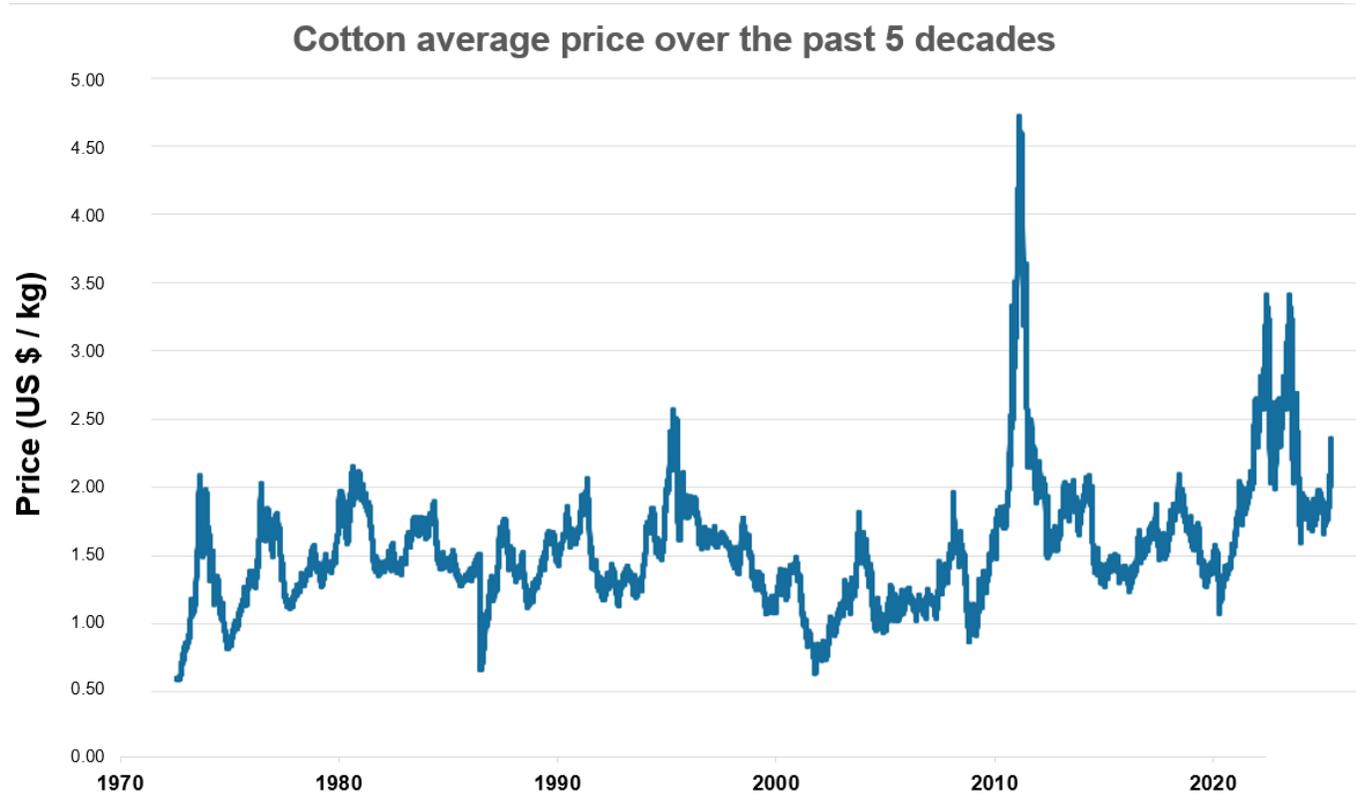
Source: Uster News Bulletin

Relationships between fiber properties & fabric quality



Source: Uster News Bulletin

Why is it even more important to implement optimum bale management in the best possible way?



- Need to minimize inventories
- Consumption also fluctuates widely
- Global competition
- Need to use modern technological tools
- Data automation is the enabler for further mill optimization

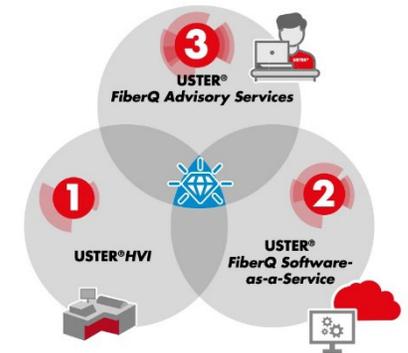
Source: <https://www.macrotrends.net/2533/cotton-prices-historical-chart-data>



Summary and outlook



- Proper bale management supports spinning mills in achieving optimal yarn quality.
- Variations in raw material need to be controlled, to obtain stable and sustainable quality in yarns. Depending on the utilized spinning system and desired end product different fiber parameters are more relevant than others.
- The fabric quality is highly affected by the yarn quality.
- As proven in a few mills the bale management that looks on all angles of the textile industry does not only support the spinning mills, it also reduced the number of claims by barré as well.
- Case studies on our applications and Uster News Bulletins you can find also in our Insights App.



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