

The Advantages of using US Cotton Rich Yarns in Knitted Fabric & Garment Manufacturing

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Background

- Over the last two years I have conducted two separate research projects for CCI to compare the technical and financial performance of US cotton in the manufacture of knitted garments.
- In 2017 we compared US cotton with fiber from India and the CIS.
- In 2018 we have conducted a follow-up study, this time comparing cottons from Brazil and West Africa against US fiber.
- The mill partners chosen for each study were totally vertical manufacturers of knitted garments in Bangladesh, who were key suppliers to major brands and retailers in the USA and Europe.
- The mill partners chosen for the projects were selected, evaluated and qualified by myself after discussions with local CCI staff.

Project Methodology

Stage 1

Technical/
Manufacturing
evaluation

Stage 2

Financial
analysis of the
impact of
technical
performance on
apparent raw
material costs

Technical/Manufacturing Evaluation

Cottons with similar properties & characteristics were purchased by the partner mills

The partner's standard process data, machine settings, recipes etc, were repeated for each cotton

All three yarns spun were 100% cotton, carded ring spun, Ne30/1

The garments chosen were single jersey, circular knit, T and Polo shirts

Knitted fabrics were dyed in 3 colors: white, a light color and dark navy

All fabrics, cut pieces and garments were inspected to the standards of major customers of the partners

Decisions regarding quality levels, rejects etc, were taken by partner's Quality Control team

Technical/Manufacturing Summary

- In yarn manufacturing, the QC results from both studies showed that the yarns spun from US cotton had a marginally higher short fiber content, more imperfections and slightly lower CSP figures than some of the yarns spun with the comparison fibers.
- During spinning the waste loss from US cotton was bettered only by the results of the CIS and West African fibers.
- In the knitting trials, the US cotton yarn performed well with significantly lower fiber loss than any of the comparison fibers.
- Process losses during dyeing and finishing, from the fabrics knitted with US cotton yarns, were also significantly lower.

Technical/Manufacturing Summary

- The major problem of foreign fiber contamination contained in the West African and Indian cottons began to appear even in the grey fabric, before D&F.
- There was also minor foreign fiber contamination problems in both the CIS and Brazilian fibers that only showed once these fabrics were dyed.
- In both studies, there was no foreign fiber contamination observed in US cotton yarn, grey or finished fabric.
- The superior manufacturing performance of US cotton is demonstrated during garment making.

Financial Analysis

- To calculate the financial impact of the manufacturing performance of each fiber we calculated a “clean cost” at the exit of every process.
- This takes the cost of each fiber at the entry point of a process and the “value” of the fiber at the exit point, after the added cost of process loss is added back to the original input cost.
- The next slide shows the application of that methodology through every step in the garment making process.
- Obviously the further down the process chain, the greater the financial impact of the losses.

Financial Impact of Losses in Manufacturing on Final Fiber Cost

		2017						2018					
		India		CIS		USA		USA		Brazil		West Africa	
Fiber	“Mill Door” Price	%	0.84	%	0.92	%	0.87	%	0.94	%	0.93	%	0.95
Spinning	Clean Cost	16.96	1.01	13.65	1.06	14.63	1.02	14.55	1.08	15.16	1.07	12.49	1.07
Knitting	Fiber loss	0.99	1.02	0.69	1.06	0.36	1.02	0.006	1.08	0.54	1.08	0.54	1.08
D&F	Fiber loss (gsm)	3.90	1.06	2.90	1.09	0.60	1.03	4.8	1.13	6.7	1.15	9.8	1.19
Cutting	Fabric waste	18.25	1.24	20.20	1.29	16.57	1.19	20.3	1.36	22.3	1.41	27.7	1.52
Garment	Rejection %	67.00	1.62	57.00	1.63	10.00	1.25	4.5	1.42	13.5	1.60	35.4	2.06

Financial Analysis Summary

- In the 2017 study Indian cotton entered the plant at a price that was \$0.3 cents per lb. below the cost of US cotton.
- ***After garments had been manufactured, the cost of US cotton was \$0.38 cents per lb. lower than the initially cheaper Indian fiber.***
- ***Similarly, garments made with CIS cotton were \$0.41 cents per lb. more expensive than their US equivalent.***
- The 2018 study told the same story.
- ***Garments made with Brazilian cotton had a raw material cost \$0.18 cents per lb. higher than those made with US fiber at the end of the process.***

Financial Analysis Summary

- *In this year's trial, West African cotton entered the mill \$0.01 cents per lb. more expensive than the US fiber.*
- *With the disastrous levels of foreign fiber contamination contained in the West African cotton, this price disadvantage had increased to \$0.64 cents per lb. at the end of the process chain.*
- *Both studies confirmed the significant operational and financial advantages of using US cotton in the manufacture of knitted garments.*

Thank you

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