



An exploratory study of sustainability ratings for conventional and alternative textiles on environmental effects

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Robert Gutman, a noted architect and sociologist, once said, “Every profession bears the responsibility to understand the circumstances that enable its existence” (Environmental Management and Business Institute, n.d.), and the textiles and apparel industry is no exception. As one of the largest industries in the world (Parvathi, 2009), it relies on a number of “circumstances” including the natural environment, manpower, and technology to thrive and produce a product. With the large number of environmental concerns effecting humanity today, the topic “environmental sustainability” has become a critical one in the textiles and apparel industry. This is due to the fact that this industry relies on sources that are quickly becoming scarce, such as freshwater, oil, and fertile soils (Cotton sustainability, n.d.). Due to the most common methods used to produce textiles, the textiles and apparel industry has become one of the most polluting to the environment on which it relies (Parvathi, 2009). This heavy reliance on the depleting natural environment makes it critically important for the textiles and apparel industry to develop more environmentally sustainable methods for production.

The purpose of this study was to assess the level of sustainability for seven textile sources using the criteria of environmental effects, which would eventually lead to propose the initial steps of sustainability in textile production. This study used an exploratory approach by reviewing a number of references including journals from various fields (e.g., agriculture, environmental), industry case studies, and organizational websites (e.g., Cotton Inc., American Bamboo Society, Natureworks LLC). The study was conducted with the assumption that the alternative textiles would be far more sustainable than the conventional one.

The sample textiles for this study included cotton, the most common conventional textile source, and the six less common or alternative textile sources such as bamboo, hemp, Ingeo or corn based, milk, salmon leather, and soy. All seven sources derived from the natural environment and were rated by the following environmental effects: water usage of the original source, chemical usage required produce the original source, effects the original source had on the soil, land usage, carbon footprint, water usage to convert the original source into textiles, chemical usage to convert the original source into textiles, whether or not the source is a reuse of a waste product, the effects the process has on humans, and life cycle options for the textiles (see Table 1). Each textile source was given a score from “1= most sustainable,” to “7= least sustainable” based on the compilation of information collected for each source through the various references. The individual scores were then averaged to determine which source was the most sustainable by comparison.

The results of this study presented that the milk-based textile was the most sustainable (mean score of 2.4), followed by bamboo (3.2), Ingeo (3.6), hemp (3.8), soy (4.3), salmon leather (4.4), and lastly cotton (5). While this study shows that the alternative textiles are more sustainable than the conventional one, it also shows that no single source can fully resolve the issues related to environmental impacts from the textiles and apparel industry. This result leads to the importance of further research into improving the sustainability of the textile sources already available, looking to new, innovative textile sources as potential sustainable options, and diversifying the textile sources used so as not to rely on just a few.

*Table 1.* Sustainability scores of conventional and alternative textile sources.

	Bamboo	Cotton	Hemp	Ingeo	Milk	Salmon Leather	Soy
Water usage (original source)	3	7	2	5	1	6	4
Chemical usage (original source)	1	7	3	6	2	5	4
Effects on soil	1	6	2	5	3	-	4
Land usage	1	2	3	5	3	-	4
Carbon footprint	1	5	3	2	7	6	4
Water usage (textile)	6	3	7	2	1	4	5
Chemical usage (textile)	7	3	5	2	1	4	6
Reuse of waste product	5	5	5	5	1	1	1
Effects on humans	2	6	5	3	1	7	4
Life cycle options	5	6	3	1	4	2	7
Mean score	3.2	5	3.8	3.6	2.4	4.4	4.3

*Note.* Number indicates the sustainability rating score of each textile source, from “1= most sustainable” “4=neutral” to “7=the least sustainable.”

As the industry relies heavily on the earth to produce a product, it is critically important to research sustainable textiles, especially in the current global climate. By exploring textile options that may be more sustainable than the conventional ones being used by the majority of textiles and apparel manufacturers, it is possible to make this industry a more sustainable one that thinks about the environmental impacts of its product and implements practices that create a healthier Earth. The results of this study show that diversifying textile sources can assist in improving the overall sustainability of the industry, even though there is not yet a perfect answer. Future strategic plans are needed for diversifying the use of these sources.

## References

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